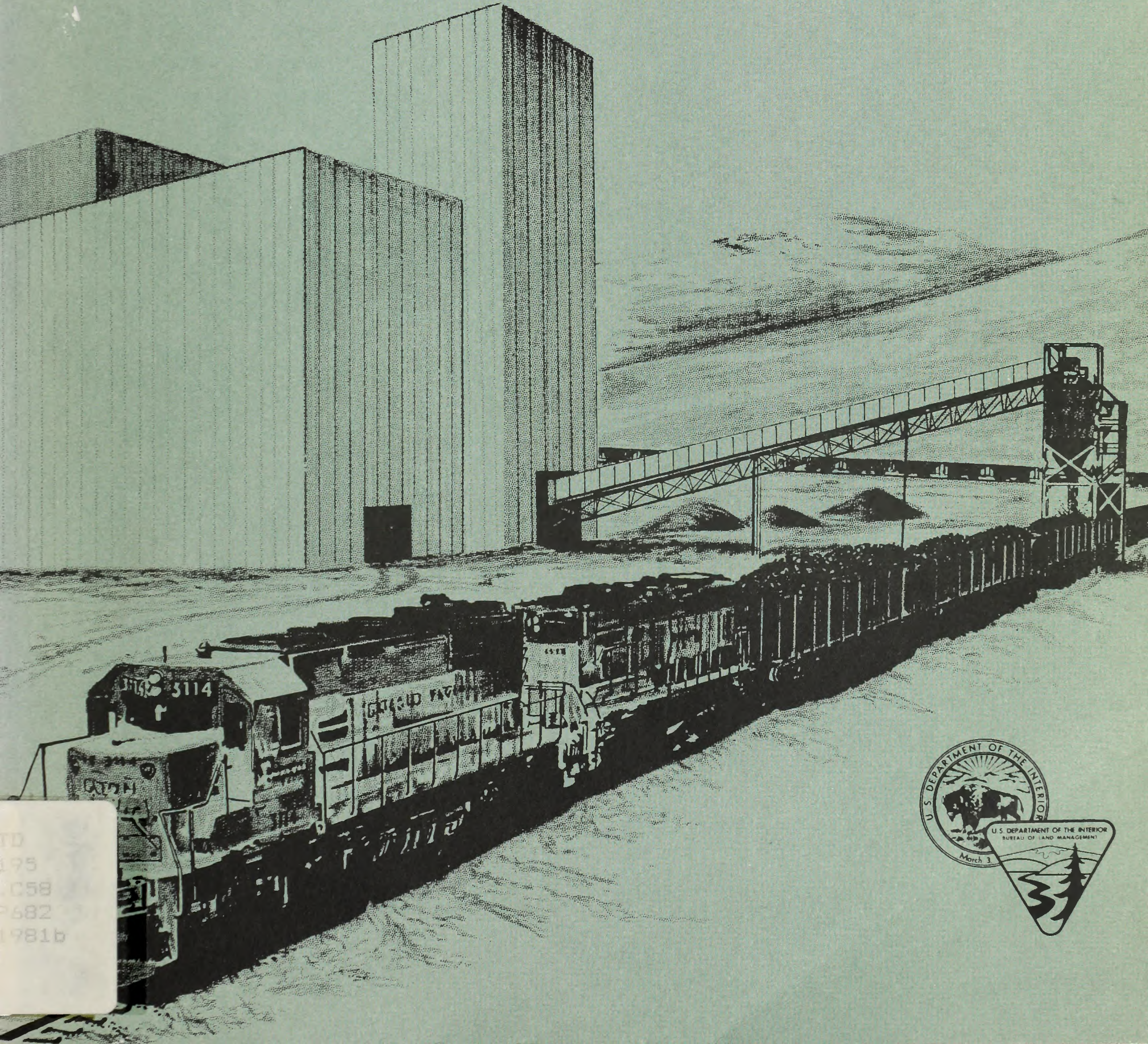
BLM LIBRARY
88013622

POWDER RIVER

FINAL ENVIRONMENTAL IMPACT STATEMENT
COAL

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT



TD
175
C58
P682
1981b

POWDER RIVER COAL REGION
ENVIRONMENTAL IMPACT STATEMENT

( ) Draft (X) Final

Lead Agency

U.S. Department of the Interior, Bureau of Land Management

Cooperating Agencies

U.S. Department of Agriculture
Forest Service

U.S. Department of Interior
U.S. Geological Survey

Type of Action

1. Administrative (X) Legislative ( )

2. Abstract

This statement assesses the environmental consequences of four alternative levels of coal development. The alternatives range from leasing 19 tracts (2.6 billion tons) to leasing 13 tracts (1.5 billion tons), and also includes the No-Action Alternative. The No-Action Alternative includes three I-90 coal exchanges, two noncompetitive leases, and 67 PRLAs totaling 15 mine units. The statement assesses impacts that would occur in Big Horn, Powder River, and Rosebud counties in Montana and Campbell, Converse, Crook, Johnson, Natrona, Sheridan, and Weston counties in Wyoming, as a result of coal leasing and development; and, cumulative impacts from the I-90 exchanges, noncompetitive leases, and PRLAs.

3. The draft environmental impact statement received a 60-day public review. Comments received during this review period have been incorporated into the analysis contained in this final environmental impact statement. Comments were received from various individuals, organizations and governmental agencies and are displayed in Appendix H of this document.

4. For further information regarding this statement or proposed alternative action contact:

Mr. Charles Wilkie
Team Leader
Bureau of Land Management
951 Rancho Road
Casper, WY 82601

5. The draft of this environmental impact statement was made available to EPA and the public July 24, 1981.

6. This final environmental statement will be made available to the EPA and the public December 1, 1981.

DISTRIBUTION LIST

FEDERAL AGENCIES

Department of Agriculture

- Forest Service
- Soil Conservation Service

Department of the Army, Corps of Engineers

Department of Energy

Department of the Interior

- Bureau of Indian Affairs
- Bureau of Reclamation
- Fish and Wildlife Service
- Geological Survey
- National Park Service
- Office of Surface Mining
- Bureau of Mines

Department of Justice

Department of Transportation

Environmental Protection Agency

INDIAN TRIBES

Northern Cheyenne Tribe
Crow Tribe

STATE AGENCIES

Montana State Clearinghouse
Wyoming State Clearinghouse

LOCAL AGENCIES

Big Horn County Commissioners
Campbell County Commissioners
Carbon County Commissioners
Crook County Commissioners
Johnson County Commissioners
Natrona County Commissioners
Powder River County Commissioners
Rosebud County Commissioners
Sheridan County Commissioners
Weston County Commissioners

OTHER ORGANIZATIONS AND INDIVIDUALS

Numerous other organizations and individuals expressing interest in the proposed action have been sent copies of this statement and have been invited to comment.

MAJOR SPECIAL INTEREST GROUPS

American Wilderness Alliance
Friends of the Earth
National Wildlife Federation
Northern Plains Resource Council
Powder River Basin Resource Council
Sierra Club
Wilderness Society

88013622

TD
195
.C58
P682
1981b

FINAL

POWDER RIVER
REGIONAL COAL
ENVIRONMENTAL IMPACT STATEMENT

PREPARED BY:

BUREAU OF LAND MANAGEMENT
DEPARTMENT OF THE INTERIOR

Maxwell T. Lieurance

STATE DIRECTOR

WYOMING STATE OFFICE

TABLE OF CONTENTS

SUMMARY 1

CHAPTER 1 PURPOSE AND NEED 5

INTRODUCTION 5

REQUIRED AUTHORIZATIONS 5

PURPOSE AND NEED FOR LEASING WITHIN THE REGION 5

REVIEW OF PROGRAM IMPLEMENTATION WITHIN THE REGION 6

OTHER COAL 7

ISSUES AND AREAS OF CONCERN 7

TRACT RANKING 8

TABLES FOR CHAPTER 1 9

CHAPTER 2 ALTERNATIVES INCLUDING THE PROPOSED ACTION 13

INTRODUCTION 13

ASSUMPTIONS 13

ALTERNATIVE 1 (NO ACTION) 14

ALTERNATIVE 2 16

ALTERNATIVE 3 18

ALTERNATIVE 4 20

CONCLUSION 21

TABLES AND FIGURES FOR CHAPTER 2 22

TABLE OF CONTENTS

CHAPTER 3 DESCRIPTION OF THE AFFECTED ENVIRONMENT 35

INTRODUCTION 35

GEOLOGY AND OTHER MINERALS 35

WATER RESOURCES 35
    GROUND WATER 35
    SURFACE WATER 37

AIR QUALITY 37

SOILS, VEGETATION, AND RECLAMATION 38

WILDLIFE 38

CULTURAL RESOURCES 39

VISUAL RESOURCES 40

LAND USE 40
    AGRICULTURE 40
    OTHER LAND USES 40

RECREATION 41

TRANSPORTATION 41
    RAILROADS 41
    HIGHWAYS 41

NOISE 42
    RAILROADS 42
    HIGHWAYS 42

SOCIOLOGY 42
    SOCIAL ORGANIZATION 42
    COMMUNITY SERVICES AND FACILITIES 42
    HOUSING 43
    ATTITUDES 43

ECONOMICS 43

TABLES FOR CHAPTER 3 44

TABLE OF CONTENTS

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES 53

INTRODUCTION 53

GEOLOGY AND OTHER MINERALS 53

WATER RESOURCES 54
  GROUND WATER 54
  SURFACE WATER 55

AIR QUALITY 57

SOILS, VEGETATION, AND RECLAMATION 60

WILDLIFE 61

CULTURAL RESOURCES 62

VISUAL RESOURCES 62

LAND USE 63

RECREATION 63

TRANSPORTATION 64
  RAILROADS 64
  HIGHWAYS 64

NOISE 64

SOCIOLOGY 65
  SOCIAL ORGANIZATION 65
  COMMUNITY SERVICES AND FACILITIES 65
  HOUSING 65

ECONOMICS 65

UNAVOIDABLE ADVERSE IMPACTS 67

SHORT TERM VS. LONG TERM 69

IRREVERSIBLE/IRRETRIEVABLE 69

TABLES FOR CHAPTER 4 70

TABLE OF CONTENTS

LIST OF PREPARERS 85

REFERENCES 87

APPENDIX A AIR QUALITY A-1

APPENDIX B WILDLIFE B-1

APPENDIX C CULTURAL RESOURCES C-1

APPENDIX D VISUAL RESOURCES D-1

APPENDIX E RECREATION E-1

APPENDIX F TRANSPORTATION F-1

APPENDIX G ECONOMICS G-1

APPENDIX H COMMENTS AND RESPONSES H-1

SUMMARY

This Environmental Impact Statement (EIS) is intended to be a part of the decision-making process, providing information to the Secretary of the Interior and the public concerning the use of coal resources from the Powder River Region. It has been prepared to comply with the Council on Environmental Quality (CEQ) regulations issued November 29, 1978 (43 FR 55978-56007), which emphasize concentration on significant issues and impacts. This emphasis sharply defines the options and provides a clear basis for choice by the decision-maker and the public.

Tract Profiles, consisting of the tract delineation report, coal data summary and site specific analysis report, were prepared for each tract within the region. The Tract Profiles constitute the site specific analyses for the EIS although they are not physically attached to the document. These reports consider environmental, social and economic impacts that would occur on the individual tracts and may be obtained from the BLM District Office, Casper, Wyoming at no charge. Impacts identified in each of these tract profiles as well as those occurring from the No-Action Alternative are analyzed cumulatively in this EIS.

Four alternative courses of action, ranging from no new federal leasing, to offering 19 delineated tracts for lease are addressed in this document. The issue of primary concern is the impact of coal mine development and population increases to communities. Many other resource impacts are presented and analyzed here; water resources, reclamation, air quality, sociology, economics, and railroad transportation are of primary significance. Many other resource impacts are presented, but in nearly every case, they are either insignificant or are mitigated by existing regulations. Differences in impacts are mainly by degree, rather than by type.

The alternative selected by the Regional Coal Team (RCT) as the preferred alternative would offer for lease in mid-1982 15 tracts which would result in an average annual production of about 50 million tons. Eight of the 15 tracts are considered production maintenance (coal leased to sustain existing coal mines).

Other alternatives considered herein are:

Alternative 1 (No Action) includes the coal related actions that would occur with or without new competitive federal leasing. Actions within this alternative include 18 existing coal mines, 17 coal mines under construction, 67 Preference Right Lease Applications (PRLAs) organized into 15 groups, three I-90 Coal Exchanges and two non-competitve leases (Northern Cheyenne). The average annual production from this alternative would be about 369 million tons in 1990. An estimated surface disturbance of 210,000 acres would result from this alternative (see Table 2-2).

Alternative 2 considers leasing 1.5 billion tons of recoverable coal reserves from 13 tracts. The average annual production from this alternative would be about 46 million tons. An estimated surface disturbance of 57,400 acres would result from implementation of this alternative.

Alternative 3 analyzes impacts from the proposed leasing of 14 tracts including 1.5 billion tons of recoverable coal reserves. Average annual production from this alternative would be about 50 million tons. Surface disturbance would total 64,200 acres. This alternative offers the most favorable ratio of coal produced to environmental impacts generated, and is the preferred alternative.

Alternative 4 is the maximum alternative and considers leasing 2.6 billion tons of recoverable coal reserves from 19 tracts. Average annual production from this alternative would be about 90 million tons. Surface disturbance associated with this alternative would amount to 83,500 acres. This alternative would produce the most widespread environmental impacts of all federal action alternatives. Impacts would be most severe to the unicorporated community of Ashland District, Montana, where population would increase eightfold by 1990.

GENERAL CONCLUSIONS

The No-Action Alternative includes existing coal mines, coal mines under construction, PRLAs, I-90 Exchanges and non-competitive leases. It must be understood that impact from new federal leasing would add to that from the No-Action Alternative. When impacts from the No-Action Alternative is compared to impacts potentially resulting from new federal leasing, it is obvious that the No-Action Alternative has the greatest magnitude. Impacts, which can be traced to new federal leasing, are similar to those already occurring and only magnify the total.

Impacts in Wyoming center around the urbanized community of Gillette in Campbell County. Gillette has been experiencing energy-related impacts over the past ten years. Impacts in Montana would center around the rural, unincorporated community of Ashland in Rosebud County. Unlike Gillette, Ashland has experienced very little growth over the past decade. Therefore, social and economic impacts, caused by increased population, would heavily affect Ashland.

All the alternatives, including the No-Action, would further diversify the economic base within the region. This trend is well established in Wyoming but would create a shift in economic base in Montana where agriculture has accounted for a significant part of the economic base to date.

HIGHLIGHTS

GEOLOGY AND OTHER MINERALS

Coal, oil and gas, and uranium in economic quantities exist within the region. Coal production would not generally interfere with extraction of other energy minerals due to land-use planning constraints that minimize resource development conflicts.

WATER RESOURCES

Impacts as a result of new federal leasing would be very small regionally. Loss of shallow local aquifers (the coal in many cases) is extensive and would reach 257,000 acres with the preferred alternative by 1990. Water from shallow aquifers is generally poor quality (3,000-5,000 mg/L DS) although water more suitable for human use is available and would be unaffected by the preferred alternative at the 1,000-1,600 foot level. Increased costs for greater pumping lifts and new well construction are associated with loss of shallow aquifers.

AIR QUALITY

Air pollution from mining and indirect development would be local and would not significantly affect air quality except in the vicinity of the coal lease tracts. Localized areas of impact would be near Colstrip and Decker, Montana, and throughout a 22-mile strip south of Gillette, Wyoming.

There are no significant impacts forecasted for the Ashland, Montana, area which adjoins the Class I air quality area on the Northern Cheyenne Indian Reservation.

SOILS, VEGETATION, AND RECLAMATION

Soils in the area are often shallow, although slopes are generally gradual on a rolling type terrain. Reclamation success has shown to be good (Packer, 1974), although some areas could require more intensive and costly management.

WILDLIFE

Leasing of all 19 tracts would have major affects on local populations of wildlife but minor affects on regional populations. Antelope would be affected heaviest south of Gillette, Wyoming, where existing mining facilities are restricting animal movement and disturbing habitat. Four hundred acres of crucial winter antelope habitat near Decker, Montana, would be lost. Populations of sharp-tailed and sage grouse would be impacted on a local basis.

CULTURAL RESOURCES

Federal and state regulations protect these resources. Historic and architectural resources on private lands may not be protected unless steps are taken by local governments and private citizens.

LAND USE

Lands within this region are administered and controlled by a variety of governmental jurisdiction, each of which exercises a different level of land-use planning, development, and resource-use control. Land ownership pattern is dominated (85 percent) by private surface ownership with federally controlled mineral estate (split-estate).

Land-use patterns are expected to shift from agriculture toward mining and urbanization without new federal coal leasing and implementation of the preferred alternative would change this very little. Forty-four ranch and farm operations would be affected. One operator would lose his total holdings and another would lose about 80 percent. All other operations would be affected to a lesser degree. Losses to the ranches that would be substantially affected would be offset by royalties or fees paid by the mines for the use of private land.

RECREATION

Funding for urban recreation facility construction and maintenance would be available. Dispersed recreational opportunities, such as camping and fishing, are restricted somewhat throughout the region and the quality of these experiences may be diminished even further because of the expected increase in population under Alternative 1 (No Action). New federal leasing would not appreciably affect dispersed recreation.

Most of the mining considered in this EIS would severely alter the landscape. These lands are not given a high visual resource classification and in most cases are seldom seen by persons not involved in mining. Thus, degradation of visual quality would not be obvious.

There are no areas of wilderness within the region. The wilderness areas that adjoin the region would be able to absorb the additional use anticipated by population growth.

TRANSPORTATION

Wyoming has adequate highway capacity to handle the increase in traffic volume. Required maintenance is expected to fall behind due to increased use by maximum-weight vehicles.

Montana's highway system is adequate in the Colstrip area but will require major upgrading in the Ashland/Decker areas. Highways of major concern include U.S. Highways 212 from Crow Agency to Ashland, and FAS 314 from Highway 212 to Decker.

Railroad traffic on the three main lines leaving the region would increase by 20 percent under the preferred alternative. This would equate to about 50 trains daily through Miles City, Montana, and about 100 each through Newcastle and Torrington, Wyoming.

SOCIOLOGY AND ECONOMICS

Increases in population are expected with or without new federal coal leasing. The fiscal impact to communities in Wyoming would not be significant. However, impacts to Montana communities, Ashland in particular, would be severe. Rosebud County would experience significant shortages of funds for county government and schools since the proposed mines are actually located across the county line in Powder River County. Most of these impacts could be mitigated but only through strong community commitment and assistance from both federal and state governments.

CHAPTER 1

PURPOSE AND NEED

INTRODUCTION

This chapter identifies the required authorizations, purpose and need for leasing within the region, review of program implementation within the region, other coal, issues and areas of concern identified through the environmental impact statement (EIS) scoping process, and tract ranking.

REQUIRED AUTHORIZATIONS

The development of federal coal resources is controlled by numerous laws and regulations imposed by federal and state authorities. Federal laws of foremost importance include the Federal Coal Leasing Amendments Act of 1976 (FCLAA), the Federal Land Policy and Management Act of 1976 (FLPMA) and the Surface Mining Control and Reclamation Act of 1977 (SMCRA).

The purpose of the FCLAA is to provide a more orderly procedure for the leasing and development of federally-owned coal than was set forth in its parent document, the Mineral Leasing Act of 1920.

FLPMA provides the BLM with a statutory framework for land-use planning on public lands and requires that BLM use the principles of multiple use and sustained yield, give priority to the protection of areas of critical environmental concern, consider present as well as future uses of public lands, and coordinate planning activities with those of federal and state agencies.

The SMCRA provides for state regulation of surface mining and reclamation on state and private lands as well as on federal lands under the terms of a cooperative agreement. Montana and Wyoming's programs for implementing the SMCRA have been approved by the Secretary of the Interior assuring that state regulations are as stringent or more stringent than federal regulation. In addition, cooperative agreements have been approved by both Montana and Wyoming, and the Department of the Interior. Thus, both states will have primary responsibility for assuring that standards are maintained for regulating surface mining and reclamation on federal, state, and private lands, and for assuring adequate protection from environmental impacts of surface mining. State regulations deal with such aspects as water and air pollution, land use, cultural and historic preservation, reclamation, wildlife and aquatic resources, and mine safety practices.

Each lease operator is required to submit a mining and reclamation plan that complies with Montana and Wyoming regulations and U.S. Geological Survey (USGS) rules (30 CFR 211) and which demonstrates that economic coal recovery is evaluated and that noncoal resources will be protected. Action on the mining and reclamation plan must be taken by the states and the Assistant Secretary for Energy and Minerals.

PURPOSE AND NEED FOR LEASING WITHIN THE REGION

In June 1979, the Secretary of the Interior adopted a new program for management of coal resources on federal lands. This program is fully described in the Final Environmental Impact Statement: Federal Coal Management Program, in the federal regulations (43 CFR 3400), and in Federal Coal Management Program-A Narrative Description. These documents are available from the Bureau of Land Management, Office of Coal Management, Department of the Interior, 18th and C Streets, N.W., Washington, D.C. 20240.

When the Secretary adopted this new coal program, he tentatively selected various leasing targets for the coal regions in terms of tons of federal coal reserves to be leased according to a selected schedule. The tonnages contained in these leasing targets were derived from Department of Energy (DOE) production goals.

Tract selection for the Powder River Region was conducted by the RCT at the January 21, 1981, meeting in Cheyenne, Wyoming. The Federal Coal Management Program calls for the selection of the EIS preferred alternative after the regional lease target level is named by the Secretary of the Interior. The RCT selects a grouping of specific tracts to meet the leasing level favored by the Secretary. This alternative then becomes the preferred alternative in the EIS. Other lease alternatives, above and below the preferred, are also selected by the RCT for EIS evaluation. Final lease decisions, and which tracts will be offered, are made by the Secretary after completion of the EIS.

The Secretary may select, at his discretion, any combination of tracts analyzed in this EIS for final leasing. In the case of the Powder River Region, the production goal was set at 1.4-1.5 million tons. The preferred alternative as stated in this EIS meets the Secretaries production goal.

In the case of the Powder River Region, the final DOE production goals were not available to the RCT at the time of selection. Therefore, a secretarial decision naming a preferred leasing level had not been made. In order to maintain the project schedule, the RCT elected to make a selection of EIS alternatives they considered reasonable, but delay the identification of the preferred alternative.

The RCT, based on the information contained in the Tract Profiles (available from Casper District Office) and their knowledge of the development area, selected tracts that would produce specific development levels (new mining operations) in the region. They also elected to include eight tracts expected to be used for the extention of existing mining operations. Specific information on each tract within the alternatives selected by the RCT is shown on Table 1-1. A discussion of each alternative is included in Chapter 2.

REVIEW OF PROGRAM IMPLEMENTATION WITHIN THE REGION

The programmatic EIS, cited above, analyzed potential effects of alternative coal management programs (BLM, 1979b). In that same year the Secretary of the Interior selected the present Federal Coal Management Program (Secretarial Issue Document). Coal management regulations were developed and are contained in Title 43, Code of Federal Regulations, Group 3400 (43 CFR 3400). As part of his decision, the Secretary scheduled competitive coal lease sales in the Powder River Region for 1982 and 1984, and established tentative leasing target of 776 million tons for 1982.

Areas considered suitable for further consideration for coal leasing in this EIS were made available through land-use planning. The BLM, Casper District Office, Wyoming, provided a supplement to the 1977 Eastern Powder River Basin Management Framework Plan (MFP) in 1979 (Highlight Review Area Supplement), and amended that same MFP in 1980 (Gillette Review Area Amendment).

Montana tracts being considered were made available through land-use planning carried out by the BLM, Miles City District Office, Montana. The 1979 Powder River Resource Area MFP Update Report updated the 1977 MFPs for the Rosebud, Coalwood, and Decker-Birney planning units.

There may be a number of anticipated leasing actions that would take place in the future, in lease sales scheduled for 1984. The Department has determined it appropriate to state the information it now has regarding the status of these anticipated actions. One anticipated action involves federal coal located in the Hanging Woman Creek area of the Decker-Birney management framework planning area in Montana. AMOCO Minerals Company entered into agreements with Kendrick Cattle Company in 1977 regarding fee coal and surface over federal coal in this area. The fee coal reserves are insufficient to support a long-term operation, and AMOCO and Kendrick (the only affected surface owner) have expressed a strong interest in having the federal coal in the area offered for a lease sale. Because of this interest, an MFP amendment was completed in 1979 applying the unsuitability criteria. The Northern Plains Resource Council (NPRC) protested the final MFP amendment and application of the unsuitability criteria. The Montana State Director denied the protest and NPRC appealed. Due to the delay caused by consideration of this protest, the Director removed the areas covered by the protest from activity planning, and requested a new MFP amendment be prepared which would include, among other things, the exchange areas included in the No-Action Alternative, several mine extension areas, and areas of high industry interest, including Hanging Woman Creek. Coal lands found acceptable for further consideration would be scheduled for the 1984 lease sale.

The NPRC in affiliation with Tongue River Agrigultural Protective, Rosebud Protective, and Tri-County Ranchers' associations filed a petition under Section 522 of SMCRA (Tongue River Petition, December 1980) alleging that certain lands in Rosebud and Powder River counties in Montana were unsuitable for surface coal mining. A Petition Evaluation Document is being prepared by OSM. The draft is scheduled to be available in September with public hearings scheduled for late October 1981. A decision is expected in late December, and distribution of the final document is scheduled for January 1982.

In addition to the planning being carried out in the Decker-Birney, Coalwood, and Rosebud planning units in Montana, planning is also being carried out in the Western Powder River Basin (Sheridan and Johnson counties), and the Recluse Review Area (northern Campbell County) in Wyoming. The Forest Service is amending its land-use plan for Thunder Basin National Grasslands in Wyoming. Areas found acceptable for further consideration from these planning efforts, plus those delineated tracts not sold in 1982, would be available for the scheduled 1984 coal lease sale in the region.

OTHER COAL

Public Law 95-554 dated October 30, 1978 directs the Secretary of the Interior to consider specific coal leases along Interstate 90 in Wyoming for exchange. Seven lease holders are affected by this public law. One lease holder, Texaco, was granted an exchange in 1980. Three applicants (Carter-Exxon, Gulf Oil Company, and Wyodak) will be assessed in this EIS under the No-Action Alternative. Site- specific environmental assessments (EAs) will be prepared at a later date. The remaining three I-90 exchange applicants (Belco, Big Horn, and Kerr-McGee) will be analyzed later.

There are 67 preference right lease applications (PRLAs) in Wyoming. The cumulative impacts (as depicted in the initial showings submitted by the applicants) of these are assessed under the No-Action Alternative. Site-specific EAs will be prepared on these PRLAs in 1982.

Public Law 96-401 authorizes and directs the Secretary of the Interior to negotiate a cancellation agreement between the Northern Cheyenne Indian Tribe and parties holding leases or permits on Indian land. An agreement would provide for issuance of a noncompetitive lease for lands adjacent to existing operations and/or issuance of a certificate of a coal lease bidding right for an amount equal to the investment made by each party. The deadline for an agreement on leases was November 1, 1980, and permits must be agreed upon by January 1, 1982. Peabody Coal Company is the only lessee (six leases) affected by this public law; they also hold three permits. A settlement agreement was made between the Northern Cheyenne and Peabody on October 20, 1980, for a noncompetitive lease on lands in Rosebud County, Montana, called the Greenleaf-Miller project, which is included in the No-Action Alternative. Five parties hold the remaining eight permits. AMAX (holding three permits) is negotiating for lands adjacent to their Eagle Butte Mine or one of two areas adjacent to the Belle Ayr Mine, Campbell County, Wyoming. Consolidation Coal Company (CONSOL) (holding one permit) is seeking lands adjacent to its CX Ranch property, Big Horn County, Montana. Chevron Oil Company (holding one permit) is negotiating with CONSOL for a percentage of CX Ranch and will request lands adjacent to that lease. Negotiations have not begun with the remaining permit holders--Bruce L. Ennis, and Norsworthy and Reger, Inc.

There are substantial amounts of economic coal reserves on the Crow and Northern Cheyenne Indian reservations available for leasing at each tribe's discretion.

The anticipated production from Youngs Creek Mine owned by Shell Oil Company located in Big Horn County on the Crow Indian Reservation was inadvertently left out of the No-Action Alternative (baseline). An EIS has been prepared, and coal production is projected at 4.0 million tons in 1985.

Energy production within the region is at an all-time high and rapid growth is occurring. Oil and gas exploration is proceeding at record setting levels. Feasibility studies for additional coal-fired power plants are being conducted by companies such as Tri-State Electric and Black Hills Power and Light. Construction contracts are nearing completion for a second Wyodak power plant operated by Black Hills Power and Light. Uranium exploration and production has taken a down turn and the near-term market remains uncertain.

Feasibility or permitting studies are in progress on synthetic fuel production processes including synthetic gas production and liquefaction of gasoline from coal. Most notable of this group include WyCoalGas, Mobil's liquefaction process, the Hampshire syn-gas project, and ARCO's in situ gasification project.

Energy Transportation Systems Incorporated's (ETSI) coal slurry pipeline is scheduled for completion in 1984. Coal for the pipeline will be supplied by the Ft. Union and Jacob's Ranch mines, which are in production. There is no indication that coal from new federal coal leasing would be transported by the ETSI coal slurry pipeline.

ISSUES AND AREAS OF CONCERN

A notice of intent (NOI) to prepare this EIS appeared in the *Federal Register* on October 30, 1980. This NOI sought public participation in determining the scope and significant issues to be analyzed. The NOI also announced that public meetings would be held in the areas that would be directly affected.

News releases and cards announcing the public meetings were distributed. Public meetings were held the first week in December 1980 at Douglas, Gillette, and Sheridan, Wyoming; Ashland and Colstrip, Montana. Those attending were from industry, state, county and federal agencies, news media, and the general public. Letters requesting the public to participate were mailed prior to the meetings. Self-addressed, stamped comment cards and descriptions of the preliminary tracts were enclosed with the letters, and also handed out at the public meetings.

The majority of concerns expressed through the scoping process focused on impacts to water resources, air quality, socio-economics, and transportation. Concern was also expressed over the reclamation of the lands after mining. Several comments were made by the public stating the beneficial aspects of mining more coal, especially the increase in jobs. Property owners residing at Nickelson Little Farms, a subdivision northeast of the Rocky Butte tract, were concerned over the mining disturbances. A 1¼ mile buffer was established southwest of the subdivision by re-delineating the tract. Records of the scoping process are available for review at the Casper District Office.

TRACT RANKING

The RCT used the information presented in the Tract Profiles (BLM, 1981) to develop the tract ranking factors in the general categories of coal, environmental, and socio-economic data. Ranking factors within these categories are presented in Table 1-2.

These factors were used by the RCT to rank the tracts into low, medium, and high categories of desirability for leasing. Table 1-3 presents the results of the ranking of the tracts.

A detailed discussion of the ranking and selection processes is contained in the minutes of the RCT meetings held in January and March, which are available at the BLM Wyoming State Office in Cheyenne.

TABLE 1-1
COAL DATA

Tracts	Coal Ownership (Acres) a/						Reserves (Million Tons) b/						
Maintenance Tracts	Federal Uncom-mitted	Federal Leased	State	Priv-vate	Total	Reserve Base (Million Tons) Federal Uncommitted	Federal Uncom-mitted	Federal Leased	State	Priv-ate	Total	Percent Recovery	Yearly Prod. (Mil-lion Tons)
Colstrip A&B c/	1,632	2,240	280	3,613	7,765	65	36	59	2	56	153	90	7.8
Colstrip C c/	853	1,586	640	3,604	6,683	22	19	48	14	85	166	90	5.5
Colstrip D c/	2,300	0	0	2,811	5,111	48	43	0	0	54	97	90	3.4
Fortin Draw	320	0	0	0	320	50	45	0	0	0	45	90	5.0
Little Rawhide Creek	491	0	0	0	491	99	90	0	0	0	90	90	18.0
North Decker	2,050	1,850	0	0	3,900	77	69	67	0	0	136	90	3.0
Spring Creek	650	2,365	640	0	3,655	39	35	283	37	0	355	90	7.0
West Decker	40	3,040	640	0	3,720	6	5	143	36	0	184	90	6.1
Totals	8,336	11,081	2,200	10,028	31,645	406	342	600	89	195	1,226		55.8
New Production Tracts													
Ashland (Coalwood) d/	3,129	0	400	3,326	6,855	265	239	0	11	168	418	90	10.4
Cook Mountain e/	2,097	0	80	1,391	3,568	198	178	0	0	76	254	90	6.4
Coal Creek e/	1,032	0	320	1,935	3,287	67	60	0	11	93	164	90	4.1
Ashland (Decker-Birney)	1,949	0	640	2,939	5,528	132	119	0	56	203	378	90	9.1
Duck Nest Creek	2,642	0	0	398	3,040	351	316	0	0	49	365	90	12.0

Table 1-1 concluded

Tracts	Coal Ownership (Acres) a/						Reserves (Million Tons) b/						
New Production Tracts	Federal Uncom-mitted	Federal Leased	State	Priv-vate	Total	Reserve Base (Million Tons) Federal Uncommitted	Federal Uncom-mitted	Federal Leased	State	Priv-ate	Total	Percent Recovery	Yearly Prod. (Mil-lion Tons)
Northwest Otter Creek	1,311	0	640	3,484	5,435	154	139	0	62	210	411	90	10.3
Rocky Butte	4,874	0	240	40	5,154	494	445	0	24	3	462	90	15.4
Southwest Otter Creek	1,881	0	1,185	4,344	7,410	144	130	0	50	219	399	90	10.0
Spring Draw	4,608	0	641	40	5,289	451	383	0	42	3	428	85	14.3
Timber Creek	4,339	0	0	400	4,739	216	184	0	0	8	192	85	6.4
Kintz Creek	3,288	0	654	0	3,942	214	193	0	50	0	243	90	8.1
Keeline	3,327	0	600	0	3,927	194	174	0	29	0	203	90	6.8
Totals	31,348	0	5,000	14,971	51,319	2,615	2,321	0	314	864	3,499		102.9

a/ Acreage figures derived from master title plates.
b/ Tonnage figures received from USGS.
c/ Tonnage for the Rosebud Bed only.
d/ Tract not added into totals.
e/ Part of Ashland (Coalwood) tract.

TABLE 1-2
RANKING FACTORS

Coal Data	Environmental Data	Socio-economic Data
Economic Viability	Wildlife Habitat	Disruption of Family Farms/Ranches
Expansion of Existing Mines	Reclamation Potential	Changes to Agricultural Productivity
Land Pattern (Including State Lands)	Oil and Gas Development	Changes to Rural Quality of Life
	Air Quality	Changes to Communities & Local Services
	Cultural & Historic Values	Conflict With Other State/Local Development Plans

TABLE 1-3
TRACT RANKING

Tract	Ranking **			
	Coal	Env	S/E	Overall
Wyoming:				
Little Rawhide*	H	H	H	H
Duck Nest Creek*	H	H	H	H
Fortin Draw*	H	H	H	H
Rocky Butte*	H	M	M	H-M
Timber Creek*	H	M	H	H-M
Keeline*	H	H-M	H	H-M
Mt. Logan	H	M	M	M
Kintz Creek*	H	H-M	H	H-M
Wildcat	M	M	M	M
Calf Creek	M	M	M	M
Hay Creek	M	M	M	M
Spring Draw*	M	M	M	M
Rock Pile	M	L	M	L-M
Montana:				
Colstrip A&B*	H	M	M-H	H
Colstrip C*	M	M	M-H	H
Colstrip D*	M-H	M	M-H	H
Spring Creek*	H	M-H	H	H
North Decker*	M-H	M-H	M	H
West Decker*	H	H	M	H
Cook Mountain*	M-H	L-M	L	M
Coal Creek*	M-H	L-M	L-M	M
Ashland (Decker-Birney)*	M-H	L-M	L	M
Northwest Otter Creek*	H	L-M	L	M
Southwest Otter Creek*	M-H	L-M	L	M

H - High; M - Medium; L - Low Categories of desirability of leasing.
Env - Environmental
S/E - Socio-economic

* Tracts selected for the 1982 lease sale.

** As recommended by the RCT October 2, 1981.

CHAPTER 2

ALTERNATIVES INCLUDING THE PROPOSED ACTION

INTRODUCTION

This chapter describes the environmental impacts of three leasing alternatives and no action based on information and analyses described in Chapter 4. Site-specific analysis of the tracts included may be found in the individual Tract Profiles (BLM, 1981). Location of the tracts and interrelated projects are identified on the Regional Activity map. Alternatives as described, combined with the affected environment from Chapter 3, serves as the base for analysis in Chapter 4.

The Duck Nest Creek Tract, as described in the Tract Profile, was originally delineated as a maintenance tract; however, the large amount of coal reserves contained in the tract and the indication that the tract would cause an increase in annual production persuaded the RCT to require that the tract be analyzed in the EIS as a competitive tract. In addition, Spring Draw and Duck Nest Creek have actions of note that apply to them. Carter-Exxon, through I-90 exchange procedures, applied for 560 acres and about 43 million tons of recoverable coal in the Spring Draw tract. Shell, which also has interest in the Spring Draw tract, asked that the acreage not be deleted from the tract until the decision whether or not to lease the tract competitively was made. The RCT granted Shell this request. AMAX is negotiating with the Department for a noncompetitive lease in the northern part of Duck Nest Creek, containing 135 million tons of coal, under the provisions stated in Public Law 96-401.

In the interest of presenting a clear comparison of alternatives, we have limited the resource disciplines to water, air quality, reclamation, railroad transportation, sociology, and economics in this chapter. These resource components were identified through the scoping process as of major interest to the public. Detailed analyses of impacts to all affected resources may be found in Chapter 4. Cumulative environmental impacts are summarized in Table 2-1.

The alternatives are directed toward leasing various combinations of tracts to make specific tonnages of coal available for production. For analytical purposes it is assumed in each alternative that all tracts offered will be leased and, further, that they will be mined in the time frame covered by this analysis. However, it is recognized that in reality coal production will generally be governed by market demand, unless artificially constrained or encouraged. Over-leasing is not expected to drive coal production past market demand but will provide industry with a selection of tracts from which to produce. This will both compensate for any uncertainties in the base and encourage competition. Thus, the impact analysis for Alternative 4 represents a worst-case situation. The relationship between the leasing alternatives and the DOE projections are shown in Figure 2-1.

ASSUMPTIONS

The following assumptions were made to facilitate analysis of the environmental impacts of mining and coal-related developments considered in this EIS.

1) All relevant state and federal laws and regulations pertaining to coal mining and related activities will be followed and enforced. The most important of these are: Office of Surface Mining (OSM) Reclamation and Enforcement regulations (30 CFR parts 700-899), Environmental Protection Agency (EPA) regulations (40 CFR parts 0-1399), Department of the Interior's Coal Management Program regulations (43 CFR parts 23 and 3400 and 30 CFR part 211), 36 CFR 800, Montana Department of State Lands, and Wyoming Department of Environmental Quality (DEQ) regulations. It is recognized that while enforcement and observance of laws and regulations is fundamental, there may be emergency situations or cases of enforcement failure.

2) Counties which would receive the majority of impacts would be Powder River and Rosebud in Montana, and Campbell in Wyoming. In Montana, 40 percent of the socio-economic impacts would occur in Powder River County and 60 percent in Rosebud County.

3) Existing and proposed mines, and mines resulting from noncompetitive leases and PRLAs would be in production by 1990.

4) The maintenance tracts included in Alternatives 2, 3, and 4 would add to the mine life of the adjacent, existing mines rather than increase annual production.

5) State and privately owned coal included or adjoining federal lease tracts would be developed simultaneously with federal coal.
6) Coal production figures are recoverable reserves based on an 85 to 90 percent recovery rate.
7) Coal produced will be strip-mined and transported from the region by railroad.
8) Active mine life would be 40 years in Montana and 30 years in Wyoming.
9) A 3-year period (1982-1985) for mine and reclamation plan development and approval would follow leasing. During this time further information on cultural resources would be collected, and a permit obtained for surface mining. Facilities construction would require 2 years (1986 and 1987); the resulting mine would be in full production by 1990.
10) Reclamation will proceed concurrently with mining operations.
11) Lands used for housing or public facilities will not be reclaimed.
12) Postmining land use would be the same as the premining use, except for the lands used for housing, public facilities, transportation rights-of-way, and permanent changes due to development.

ALTERNATIVE 1

No new federal leasing would occur under this alternative. Annual production from the region will be from the 1979 level of 81 million tons of annual production to an estimated 369 million tons in the target year of 1990. While the yearly production would increase 359 percent without new federal leasing, it still would not generate the annual production required to meet the anticipated 1990 shortfall of 40.6 million tons based on the DOE high production goal. Table 2-2 shows coal development for the region under this alternative. Coal employment would reach 3,215 in Montana and 12,300 in Wyoming.

WATER RESOURCES

Water use would be about 600,000 acre-feet per year by 1990. Major uses would be for irrigation, 420,000 (unchanged from 1980); power plants, 46,000; municiple use, 34,500; uranium mining and milling, 14,320; and coal mining 7,430 acre-feet per year. New water uses anticipated include 20,200 acre-feet per year for coal slurry and 8,000 acre-feet per year for a synfuel plant.

Ground Water

Shallow aquifers would be removed in an area of approximately 210,000 acres by existing and projected mining operations. Existing mines would remove 67,000 acres of this total. Coal mining would remove about 95 percent of the affected acres.

Approximately 250 existing wells and 25 springs on the mine sites would be destroyed, but wells usually can be replaced by tapping deeper aquifers or with wells in spoil aquifers. Springs may eventually reappear, but would be in different locations.

Impacts of coal mining on ground water are restricted to an area within a few miles from the mine site. Water levels in wells near the mine would be lowered during mining but would return to near premining levels after the site is restored. Recharge would probably increase in many areas because the postmining slope of the land surface would be less steep and reclamation practices to retain moisture and prevent erosion would increase infiltration. Shale layers that may have caused springs and seeps would be destroyed; however, the increased infiltration may cause increased ground-water inflow to streams or the creation of new springs and seeps near the mine site.

Surface Water

The major sources of surface water would involve water originating outside the region; the power plants and synfuels operation would use water from the Yellowstone and North Platte rivers, respectively. The interception and use of water in mining operations and water consumption by the increased population would reduce the surface outflow from the region by about 4,500 acre-feet per year (0.5 percent) during mining. This reduction in surface outflow would be too small to measure, except possibly in the Belle Fourche River below Moorcroft, Wyoming, where flow might be reduced about 3.5 percent (Table 4-2). The flow of the Yellowstone River would be reduced about 0.3 percent; the North Platte River about 0.7 percent.

Although the quantity of water lost is less than 500 acre-feet, the loss of approximately 84 point-watering sources would be a deterrent to the use of the areas by wildlife and livestock until water sources are restored.

The dissolved-solids (DS) concentrations of streams may increase as a result of leaching from coal spoils and increased sewage effluent. The greatest potential increase in DS concentrations would range from 0.02 percent in Otter Creek to about 5 percent in the Belle Fourche River (Table 4-2). Increased DS concentrations resulting from increased sewage effluent would be about 0.5 percent in Goose Creek and 0.07 percent in the Tongue and North Platte rivers by 1990. The increases in DS concentrations would be long-term but would have no significant impact on current uses of the water or on aquatic biology downstream. The DS concentrations of the Yellowstone and North Platte rivers would be increased about 0.1 percent or less.

AIR QUALITY

Regional changes in air quality would be insignificant as a result of coal exchanges, PRLAs, uranium mining, power plants, and population increases resulting from these activities. However, the impacts would be significant in the near vicinity of each mine (generally within 1 mile of the individual mine boundary). Estimates of total suspended particulates (TSP), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) emissions were calculated for mines, cities, major roadways, and major point sources. By 1995 in the impact areas, an estimated 69,300 tons of particulates would be generated annually by the existing coal mines.

SOILS, VEGETATION, AND RECLAMATION

The success of reclamation and revegetation would depend on the nature of the mine site and the specifics of the mine and reclamation plan. Reclamation success has shown to be good (Packer, 1974), although some areas could require more intensive and costly management. A total of 210,000 acres would be reclaimed.

TRANSPORTATION

Railroads

Appendix F (Figure F-3), and Table 4-6 show the trains per day (TPD) for this alternative. It should be noted that these are estimates based on potential production increases; actual number of trains would depend upon contracts and coal demand. Other factors that could affect the number of coal trains are the proposed coal slurry pipeline and the proposed Chicago Northwestern/Union Pacific Line from Crandall, Wyoming, to Lyman, Nebraska. These factors may also change coal destination and the route of the unit train. Capacity of the lines that would be affected is well above the existing TPD rates. The capacity could be increased by installation of additional sidings, tracks, centralized traffic control, and other systems (personal communication, Peter Briggs, Burlington Northern, 1981). Appendix F (Figure F-4) shows interruptions for at-grade crossings.

Proposed railroad lines and spurs would add approximately 340 miles of railroad lines, which would include the proposed Tongue River Railroad, the proposed Chicago and Northwestern/Union Pacific Line, the proposed WyCoalGas Electric Line, and estimated lengths of access railroad spurs to new mines and PRLAs. Only the proposed Chicago Northwestern/Union Pacific Line would have an affect on train traffic on Burlington Northern (BN) lines leaving the region.

The Tongue River Railroad has not been constructed although definite plans have been prepared. The mining and reclamation plan for the Montco-Nance coal mine south of Ashland estimates coal production in 1985. The coal would be moved on the Tongue River Railroad. Impacts from the railroad will occur prior to those related to this round of coal leasing. It is assumed that these impacts will be assessed in an objective, comprehensive environmental impact statement being prepared by the Interstate Commerce Commission.

Based on these facts, and because BLM has no authority to assess impacts from transportation routes, no further analysis of the railroad is made in the EIS.

Table 4-6 gives a breakdown of TDP and at-grade crossing effects for Miles City, Montana (Northern Route); Gillette and Newcastle, Wyoming (Central Route); and Torrington, Wyoming (Southern Route).

SOCIOLOGY

Community Services and Facilities

Rosebud would be the most affected county in Montana under this alternative requiring 7 additional law officers, 67 teachers, 1 physician, 2 dentists, and 13 hospital beds by 1990. Additional population is not expected in Powder River County without additional federal leasings; however, because there is presently no hospital in the county, a need will exist for hospital capacity of 10 beds, based on a standard requirement of 4 beds per 1,000 population (See Table 4-8).

Additional requirements by 1990 for Campbell County would be 53 law officers, 394 teachers, 19 physicians, 5 dentists and 29 hospital beds. Natrona County additional requirements are 26 law officers, 201 teachers, 20 physicians, 8 dentists, and 58 hospital beds (see Table 4-8).

Housing

Counties requiring a significant level of additional housing without new federal leasing would be Big Horn: 1,333; Rosebud: 1,813; and Campbell: 8,650 (Table 4-9).

ECONOMICS

Table 2-3 summarizes the possible 1990 budget levels for the counties, schools and towns that would be impacted most heavily by additional federal leasing. For a wider perspective of the region see Table 4-12. It is assumed that the budgets that would exist without additional leasing would be balanced through taxation, user fees, grants, or debt.

The exact magnitude of potential deficits or surpluses should not be overemphasized. The importance of the magnitudes derives only from their ability to provide a comparison of the relative impacts and to point out where potential costs may exceed potential benefits, or vice-versa, where potential benefits may exceed potential costs. Assumptions and methodology are implicit in the footnotes to the table.

The unincorporated community of Ashland would receive the heaviest population impacts within the region. The population in Ashland is projected to be 800 in 1990 without additional leasing in the region.

ALTERNATIVE 2

Table 1-1 shows acres of coal ownership and reserves for the maintenance and new production tracts. Table 2-4 shows coal tracts and recoverable reserves by alternative.

Under Alternative 2, Interior would lease 1.5 billion tons of recoverable coal reserves on 13 competitive lease tracts, eight of which would be used to extend the life of existing mining operations (production maintenance). Five new mining operations producing 46.2 million tons of annual production above baseline levels will result from leasing of this alternative. Based on mine life assumptions, this would support an annual production of about 421 million tons by 1990. Leasing at this level will satisfy the DOE annual production shortfall of 40.6 million tons.

Subalternatives apply entirely to the Ashland (Coalwood) tract or the two parts of this tract called Cook Mountain and Coal Creek. This format became necessary when the RCT requested delineation and a separate detailed analysis of the Cook Mountain and Coal Creek tracts in March 1981.

Assessment for Alternative 2 was based on worst-case, which is Subalternative 2A. However, impacts are not noticeably different between the subalternatives within any of the resource components, except economics (see Economics section). The largest increase in coal employment would bring total coal employment to 3,985 in Montana and 13,300 in Wyoming.

SUBALTERNATIVE 2A

This subalternative considers leasing the maintenance tracts (Colstrip A&B, Colstrip C, Colstrip D, West Decker, North Decker, Spring Creek, Little Rawhide Creek, and Fortin Draw), Ashland (Coalwood), Northwest Otter Creek, Timber Creek, Duck Nest Creek, and Spring Draw. Maintenance tracts are adjacent to existing mines (Colstrip, Decker, Spring Creek, Eagle Butte, and Wyodak). These tracts contain smaller coal reserves than the competitive tracts and it is reasonable to assume that existing mines would acquire these leases. Coal production would reach 421 million tons annually within the region. Approximately 267,000 acres would be disturbed by mining within the region. The Ashland (Coalwood) tract would be considered for large or small business leasing. Timber Creek tract would be considered for small business development.

SUBALTERNATIVE 2B

This subalternative includes the maintenace tracts listed in Subalternative 2A, Coal Creek, Northwest Otter Creek, Timber Creek, Duck Nest Creek, and Spring Draw. Coal production would reach 415 million tons annually. Approximately 264,000 acres would be disturbed by mining within the region. The Coal Creek tract (the smaller part of Ashland (Coalwood)) would be considered for leasing to small business.

SUBALTERNATIVE 2C

In addition to the maintenance tracts described in Subalternative 2A this subalternative also includes Cook Mountain, Coal Creek, Northwest Otter Creek, Timber Creek, Duck Nest Creek, and Spring Draw. Coal production would reach 421 million tons annually. Approximately 267,000 acres would be disturbed by mining within the region. The Ashland (Coalwood) tract would be divided and leased as the Cook Mountain and Coal Creek tracts. Cook Mountain would be a large business lease and Coal Creek a small business lease.

WATER RESOURCES

Ground Water

Impacts on ground water resources under this alternative would add to those under Alternative 1; however, the increased coal production would cause little conflict with other uses of ground water.

Coal mining for this alternative would consume 925 acre-feet of water per year; however, most of this water would be supplied by rainfall on the mine area and ground water seepage into the pit. Forty-seven wells would be destroyed, including 28 stock and wildlife wells, 12 domestic wells, and 7 wells not currently in use. About 58 wells near the tracts would be impacted to varying degrees but would not be destroyed. The destroyed wells could be replaced at approximately their original depth in the soil aquifer after reclamation, but the quality of the water would be poorer in most cases (3,000-5,000 mg/L average). Better quality water would be obtained at greater depths in most areas, but the static water levels in the deeper wells would be lower and pumping lifts would be greater.

Eight small springs would be destroyed thus reducing water available for stock and wildlife. These water supplies could be replaced by wells 200 to 300 feet deep equipped with windmills but would result in additional expense to install and maintain the wells and equipment.

Approximately 35,000 acres of shallow aquifer would be removed to depths of 100 to 400 feet and would eventually be replaced by spoil aquifers. The quality of the water in the spoil aquifers would be poorer (DS increase by a factor of 2 to 3) than the original aquifers but would be adequate for stock and wildlife (3,000-5,000 mg/L DS). The quality would be inadequate for domestic use, but better quality water is available at depths of 600 to 1,300 feet.

Population increase associated with this alternative would require 1,400 acre-feet of water. Most of the people would live in nearby towns and municipal water use would increase by about 4 percent. This increase would not have significant impact on the region as a whole, but could have considerable impact on Broadus, Ashland, and Gillette, since it is anticipated that these towns would have the largest increases in population.

Surface Water

Surface outflow from the region would be reduced by about 350 acre-feet per year (0.05 percent) during mining. The greatest effect would be in Otter Creek at Ashland, Montana, where flow might be reduced 1.3 percent (Table 4-2). Twenty point-watering sources would be destroyed but the quantity of water lost would be insignificant. However, the loss of point-watering sources would be a temporary deterrent to the use of the areas by wildlife and livestock.

The potential increase in DS concentrations in streams would range from 0.1 percent in Rosebud Creek to 4.0 percent in Armells Creek (Table 4-2). However, these increases would have no significant impact on current uses of the water or on aquatic biology downstream and no measurable affect on the salinity of the Yellowstone River.

AIR QUALITY

TSP levels would increase significantly on a localized basis. About 4,800 tons per year would be added to the Colstrip area (however this increase would be effectively offset by the completion of mining at other locations within the area), 2,200 tons per year to the Decker area, 2,900 tons per year to the Custer National Forest, and 5,500 tons per year to the Gillette area. Some potential exists for violations of National and State Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) standards near existing and proposed mines. Population and transportation emissions would cause increases of 70 percent above existing levels in the Custer National Forest and 5 percent in the Gillette area.

SOILS, VEGETATION, AND RECLAMATION

A total of 267,400 acres would need to be reclaimed which is 57,400 acres more than the baseline.

TRANSPORTATION

Railroads

Approximately 6 miles of new railroad spur would be needed. Appendix F (Figure F-3), and Table 4-6 show TPD and train interruptions for at-grade crossings.

SOCIOLOGY

Community Services and Facilities

Additional requirements to Rosebud and Powder River counties over 1990 baseline would be very similiar. These requirements are law officers: 2, 2; teachers: 23, 21; physicians 1, 1; dentists: 1, 1; and hospital beds: 4, 5; respectively (Table 4-8).

Campbell County would receive all major impacts in Wyoming with the additional requirements over 1990 baseline as follows: law officers: 6; teachers: 39; physician: 2; dentist: 1; and hospital beds: 3 (Table 4-8).

These additional requirements would be the same for Alternative 3.

Housing

Additional housing requirements in Powder River County would be 500; 280 of this amount would be located in the town of Broadus. Rosebud County would require 750 additional dwellings, which would all be located in the Ashland district. Campbell County would require 900 additional dwellings; 460 would be located in Gillette (see Table 4-9). These additional requirements would be the same for Alternative 3.

ECONOMICS

The fiscal impacts of Alternatives 2 and 3 would be the same. See Table 2-3. A negative balance in the table implies the potential of a budget deficit that would require tax levies or charges for services. The potential for budget deficits in Powder River and Rosebud counties would be least under Subalternative 2B or 3B.

Alternative 2 or 3 would add about 1,700 to Ashland's projected 1990 population of 800. Subalternative 2B or 3B would add about 1,200.

Agricultural Impacts

The impacts to agricultural economics under Alternative 2, 3, and 4 are considered insignificant. Tables G-1 and G-2 in Appendix G contain the logic and methodology used in arriving at that conclusion for the Montana Region. The Tract Profiles for the Wyoming tracts contain the analysis that leads to that conclusion for the Wyoming tracts.

ALTERNATIVE 3

Under this alternative 1.5 billion tons of recoverable coal reserves would be leased on 14 competitive lease tracts, eight of which are considered production maintenance. Six new mining operations producing 50.3 million tons of annual production above baseline levels will result from leasing of this alternative. Based on mine life assumptions, this would support an annual production of 422 million tons by 1990. Leasing at this level will satisfy the DOE annual production shortfall of 40.6 million tons.

Subalternatives apply entirely to the Ashland (Coalwood) tract or the two parts of this tract called Cook Mountain and Coal Creek. This format became necessary when the RCT requested delineation and a separate detailed analysis of the Cook Mountain and Coal Creek tracts in March 1981.

Assessment for Alternative 3 was based on worst-case, which is Subalternative 3A. However, impacts are not noticeably different between the subalternatives within any of the resource components, except economics (see Economics section). Employment increases under the alternative would be the same as under Alternative 2.

Subalternative 3C has been selected as the RCT's preferred alternative.

SUBALTERNATIVE 3A

This subalternative considers leasing the maintenance tracts described under Subalternative 2A, Ashland (Coalwood), Northwest Otter Creek, Timber Creek, Duck Nest Creek, Kintz Creek, and Keeline tracts. Coal production would reach about 422 million tons under this subalternative. Acreage disturbed would be about 274,000 acres regionally. This subalternative is the same as 2A in Montana but substitutes Kintz Creek and Keeline tracts for Spring Draw in Wyoming. Kintz Creek would be leased for large business development and Keeline would be a small business lease.

SUBALTERNATIVE 3B

This subalternative includes the maintenance tracts described in Subalternative 2A, Coal Creek, Northwest Otter Creek, Timber Creek, Duck Nest Creek, Kintz Creek, and Keeline tracts. Coal production would reach about 415 million tons annually with this subalternative. Acreage disturbed would be about 271,000 acres regionally.

SUBALTERNATIVE 3C

This subalternative includes the maintenance tracts described in Subalternative 2A, Cook Mountain, Coal Creek, Northwest Otter Creek, Timber Creek, Duck Nest Creek, Kintz Creek, and Keeline tracts. Coal production would reach about 422 million tons under this subalternative. Acreage disturbed would be about 274,000 acres regionally.

WATER RESOURCES

Ground Water

Annual water use for coal mining would be about 880 acre-feet and municipal use about 1,400 acre-feet. About 49 wells would be destroyed, including 34 stock and wildlife wells, eight domestic wells and nine wells not currently in use. About 60 wells would be impacted to varying degrees but would not be destroyed.

Approximately 37,000 acres of shallow aquifers would be removed to depths of 100 to 400 feet but would eventually be replaced by spoil aquifers.

Surface Water

Impacts to surface water under this alternative are the same as those described under Alternative 2.

AIR QUALITY

TSP levels would increase significantly on a localized basis. About 4,800 tons per year would be added to the Colstrip area (however this increase would be effectively offset by the completion of mining at other locations within the area), 2,200 tons per year to the Decker area, 2,500 tons per year to the Custer National Forest area, and 6,900 tons per year to the Gillette area. Some potential exists for violations of NAAQS and PSD standards near existing and proposed mines. Population and transportation emissions would cause increases of 70 percent above existing levels in the Custer National Forest and 5 percent in the Gillette area.

SOILS, VEGETATION, AND RECLAMATION

A total of 274,200 acres would need to be reclaimed which is 64,200 acres more than the baseline.

TRANSPORTATION

Railroads

Impacts to the railroads would be the same as Alternative 2 except for TPD and at-grade crossing effects for Torrington, Wyoming (see Table 4-6).

SOCIOLOGY

Impacts to community services and facilities, and housing are the same as described in Alternative 2.

ECONOMICS

The fiscal impacts of Alternatives 2 and 3 would be the same, as well as the increases to Ashland's population. See Table 2-3 and the Economics section under Alternative 2.

ALTERNATIVE 4

This alternative includes the maintenance tracts described in Subalternative 2A, Cook Mountain, Coal Creek, Ashland (Decker-Birney), Northwest Otter Creek, Southwest Otter Creek, Rocky Butte, Kintz Creek, Keeline, Timber Creek, Duck Nest Creek, and Spring Draw.

This is the maximum leasing alternative being evaluated in the EIS. Under this alternative 2.6 billion tons of federal recoverable coal reserves would be leased on 19 competitive lease tracts, eight of which are considered production maintenance. Eleven new mining operations producing 89.9 million tons annually above baseline levels will result from leasing of this alternative. Based on mine life assumptions, this would support an annual production of about 470 million tons by 1990. Leasing at this level will double the DOE annual production shortfall of 40.6 million tons. Employment associated with coal production would reach about 4,675 in Montana and 14,300 in Wyoming. Acres disturbed by mining would be approximately 293,000 acres regionally.

As indicated earlier, the following impact analyses assume that all coal offered will be leased and mined on schedule. However, it should be noted that possible production under this alternative (467 million tons per year) exceeds DOE's 1990 high production goal (412 million tons per year). Production approximating DOE's high goal would result in impacts similar in type and severity to those described under Alternatives 2 and 3 rather than those presented below.

WATER RESOURCES

Ground Water

Increased coal production at this level would have more impact on the ground water resources than any of the other new leasing alternatives, but the regional impact would still be small and would cause little conflict with other uses of ground water.

Coal mining for this alternative would consume 1,920 acre-feet of water per year. However, most of the water would be supplied by rainfall on the mine area and ground water seepage into the pit. One hundred wells would be destroyed, including 60 stock and wildlife wells, 16 domestic wells, one industrial well (oil flooding), and 23 wells not currently in use. An additional 81 wells would be impacted to varying degrees but would not be destroyed. The destroyed wells could be replaced at approximately their original depth in the spoil aquifer after reclamation, but the quality of the water would be poorer (DS increase by a factor of 2 to 3). In most of the area better quality water (1,000 to 3,000 mg/L dissolved solids) can be obtained at greater depths but the static water level in the deeper wells would be lower and pumping lifts would be greater (BLM, 1979a).

Ten small springs would be destroyed and would not be re-established after reclamation, thus reducing water available for stock and wildlife. These water supplies could be replaced by wells 200 to 300 feet deep equipped with windmills; however, there would be expense to install and maintain wells and equipment.

Approximately 60,000 acres of shallow aquifer would be removed to depths of 100 to 400 feet and would eventually be replaced by spoil aquifers. The quality of the water in the spoil aquifers would be poorer (3,000 to 5,000 mg/L dissolved solids) but adequate for stock and wildlife. The quality would be inadequate for domestic use, but better quality water (1,000 to 3,000 mg/L dissolved solids) usually is available at depths of 400 to 1,300 feet.

The increase in population would require 2,700 acre-feet of water. Most of the persons would live in nearby towns and their water demands would increase municipal use about 8 percent. This amount would not have significant impact on the region as a whole, but could have significant impact on Ashland, Broadus, and Gillette since it is anticipated these towns would have the largest increase in population.

Surface Water

Surface outflow from the region would be reduced by about 700 acre-feet per year (0.1 percent) during mining. The greatest affect would be in Otter Creek at Ashland, Montana, where flow would be reduced 2.7 percent (Table 4-2). About 33 point-watering sources would be destroyed but the quantity of water lost would be insignificant. However, the loss of point-watering sources would be a temporary deterrent to the use of the areas by wildlife and livestock.

The potential increase in DS concentrations in streams would range from 0.1 percent in Rosebud Creek to 4.0 percent in Armells Creek (Table 4-2). However, these increases would have no significant impact on current uses of the water or on aquatic biology downstream and no measurable effect on the salinity of the Yellowstone River.

AIR QUALITY

TSP levels would increase significantly on a localized basis. About 4,800 tons per year would be added to the Colstrip area, (however this increase would be effectively offset by the completion of mining at other locations within the area), 2,200 tons per year to the Decker area, 6,500 tons per year to the Custer National Forest area, and 11,900 tons per year to the Gillette area. Some potential exists for violations of NAAQS and PSD standards near existing and proposed mines. Population and transportation emissions would cause increases of 139 percent in the Custer National Forest area and 5 percent in the Gillette area.

SOILS, VEGETATION, AND RECLAMATION

A total of 293,500 acres would need to be reclaimed which is 83,500 acres more than the baseline.

TRANSPORTATION

Railroads

Railroad spurs needed to serve mine facilities would add approximately 30 miles of new railroad lines. Appendix F (Figures F-3 and F-4), and Table 4-6 show TPD and at-grade crossing effects.

SOCIOLOGY

Community Services and Facilities

Rosebud and Powder River counties would require the following additional services and facilities over baseline: law officers: 5, 3; teachers: 50, 42; physicians 1, 1; dentists: 1, 1; and hospital beds: 9, 9; respectively.

Additional services and facilities required for Campbell County above baseline are law officers: 11; teachers: 81; physicians: 3; dentists: 1; and hospital beds: 6 (Table 4-8).

Housing

Powder River County would require 1,000 additional dwellings; 800 of these dwellings would be located in Broadus. Rosebud County would require 1,500 additional dwellings all of which are located in the Ashland district. Campbell County would require 1,800 additional dwellings; 900 would be located in Gillette (Table 4-9).

ECONOMICS

The potential for budget deficits is the greatest under Alternative 4 (see Table 2-3). This alternative would add about 3,400 to Ashland's projected 1990 population of 800.

CONCLUSION - PREFERRED ALTERNATIVE

Subalternative 3C is the preferred alternative. This meets the target level of leasing as chosen by the Assistant Secretary Land and Water Resources, U.S. Department of the Interior, which was set at 1.5 billion tons of recoverable coal. This decision is, however, an interim one in the process of determining how much coal will ultimately be offered for sale in the region. The final decision on the tracts which will be offered will be made after review of the final EIS and and public comments received on the draft.

TABLE 2-1
CUMULATIVE ENVIRONMENTAL IMPACTS

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Water Resources				
Ground Water Number of wells destroyed or impacted (maximum through mine life)	252 wells would be destroyed, 203 wells would be impacted.	299 wells would be destroyed, 261 wells would be impacted.	310 wells would be destroyed, 263 wells would be impacted.	352 wells would be destroyed, 284 wells would be impacted.
Acres of aquifers removed (maximum)	210,000	245,000	247,000	270,000
Number of springs destroyed	25	33	35	35
Water required for coal mining (acre-feet) in 1990	7,430	8,355	8,310	9,350
Municipal water required by population (acre-feet) in 1990 * Water used by incorporated communities and light industry.	32,000 *	33,400	33,400	34,700
Domestic water required (acre-feet) in 1990 ** Water used by rural subdivisions, rural residents and livestock.	23,000 **	---	---	---

Table 2-1 continued

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Water Resources				
Surface water Reduction in surface outflow (maximum percent) through mine life)				
Yellowstone River	0.3	.303	.303	.306
North Platte River	0.7	0	0	0
Increase in dissolved-solids concentration (percent)				
Yellowstone River	.09	.12	.12	.13
North Platte River	0.07	0	0	0
Loss of point-watering source (maximum through mine life)	84 point-watering sources would be destroyed	104 point-watering sources would be destroyed.	104 point-watering sources would be destroyed.	117 point-watering sources would be destroyed.
Air Quality				
Total TSP level (tons per year) (maximum production)	69,300	84,700	86,100	94,900

Table 2-1 continued

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Soils, Vegetation & Reclamation				
Total acres to be reclaimed	210,000	267,400	274,200	293,500
Transportation				
Total unit coal trains per day	183	234	242	262
Average interruption at at-grade crossing per day at 5 miles per hour	12 hours 10 minutes	15 hours 10 minutes	16 hours 5 minutes	17 hours 30 minutes
Probability of car-train accidents at an at-grade crossing for 1,000 motor vehicle per day	10 in 100 years	12 in 100 years	12 in 100 years	13 in 100 years
Sociology				
Community service requirements in 1990				
Powder River County				
Law Enforcement	4	6	6	7
Teachers	48	69	69	90
Physicians	1	2	2	2
Dentists	1	2	2	2
Hospital Beds	10	15	15	19

Table 2-1 continued

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Sociology				
Rosebud County				
Law Enforcement	21	23	23	26
Teachers	210	235	235	260
Physicians	4	5	5	5
Dentists	6	7	7	7
Hospital Beds	39	43	43	48
Campbell County				
Law Enforcement	109	115	115	120
Teachers	811	850	850	892
Physicians	39	41	41	43
Dentists	10	11	11	11
Hospital Beds	60	63	63	66
Housing requirements in 1990				
Powder River County	1,150	1,650	1,650	2,150
Broadus	350	630	630	1,150
Rosebud County	5,600	6,350	6,350	7,100
Ashland District	350	1,100	1,100	1,850
Campbell County	17,600	18,500	18,500	19,400
Gillette	9,000	9,460	9,460	9,900

Table 2-1 concluded

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Economics				
Projected incremental net fiscal balances expected to result for local governments ($1,000)				
Powder River County, Montana	0	300	300	-900
County Schools	0	3,200	3,200	3,900
Broadus	0	100	100	-100
Rosebud County, Montana	0	-1,100	-1,100	-2,300
County Schools	0	-1,100	-1,000	-2,100
Forsyth	0	0	0	0
Ashland District Population	800	2,480	2,480	4,200
Campbell County, Wyoming	0	4,300	4,300	8,600
School District #1	0	6,700	6,700	13,400
Gillette	0	-500	-500	-1,000
Net Energy Analysis				
Energy Produced				
Energy Consumed (BTUs Annually)	---	$\frac{223.0}{1}$	$\frac{225.8}{1}$	$\frac{221.6}{1}$

TABLE 2-2
COAL DEVELOPMENT - POWDER RIVER REGION

Location and Name	Annual Production (Million Tons) a/			
	1979	1985	1990	1995
Existing Mines				
Wyoming:				
Campbell County				
Belle Ayr (AMAX)	15.0	19.0	19.0	19.0
Black Thunder (Thunder Basin Coal Co.)	6.2	20.0	20.0	20.0
Caballo (Carter-Exxon)	1.3	7.5	12.0	12.0
Clovis Point (Kerr-McGee)	.3	4.0	4.0	4.0
Cordero (Cordero Mining-Sunedco)	3.8	15.0	15.0	24.0
Eagle Butte (AMAX)	3.7	19.0	20.0	--
Ft. Union (Ft. Union Mine Partnership)	.01	1.2	1.2	--
Jacobs Ranch (Kerr-McGee)	4.7	14.0	14.0	14.0
North Rawhide (Carter-Exxon)	3.6	24.0	24.0	24.0
Wyodak (Black Hills Power & Light)	2.4	5.0	5.0	5.0
Sheridan County				
Big Horn (Peter Kiewit & Sons)	3.5	4.5	4.5	4.5
Converse County				
Dave Johnston (NERCO)	3.8	3.2	3.2	3.2
Totals	48.31	136.4	141.9	129.7
Montana:				
Powder River County				
Coal Creek	.03	.03	.03	.03
Rosebud County				
Big Sky (Peabody)	2.5	4.2	4.2	4.2
Colstrip (Western Energy)	11.4	18.6	19.1	19.1
Big Horn County				
Decker-East and West	13.2	11.8	12.2	12.2
Absaloka (Westmoreland)	5.3	10.0	10.0	10.0
Spring Creek (NERCO)	--	7.0	7.0	7.0
Totals	32.43	51.63	52.53	52.53

TABLE 2-2 continued

Location and Name	Annual Production (Million Tons) 1979	 1985	 1990	 1995
New Mines				
Wyoming:				
Campbell County				
Buckskin (Shell Oil Co.)	--	6.2	1.5	--
Coal Creek (ARCO Coal Co.)	--	8.5	10.0	10.0
Dry Fork (Cities Services Co.)	--	2.0	8.0	15.0
East Gillette (Kerr-McGee)	--	11.0	11.0	11.0
North Rochelle (Shell Oil Co.)	--	8.0	8.0	8.0
Pronghorn (Mobil Oil Co.)	--	5.0	5.0	5.0
Rochelle (Rochelle Coal Co.)	--	5.0	11.0	11.0
Caballos Rojo (Mobil Oil Co.)	--	9.0	15.0	15.0
South Rawhide (Carter-Exxon)	--	4.0	7.0	7.0
Wildcat Creek (Gulf Oil Co.)	--	5.2	10.0	10.0
Wymo Fuels Mine (Wymo Fuels, Inc.)	--	4.4	4.4	4.4
Sheridan County				
Ash Creek (Public Service of Oklahoma)	--	.5	.5	.5
Black Mountain (Black Mountain Coal)	--	.5	.5	--
Dutchman (JMT Co.)	--	2.0	2.0	2.0
Converse County				
Antelope (NERCO)	--	8.0	10.0	12.0
Totals	--	79.3	103.9	110.9

TABLE 2-2 continued

Location and Name	Annual Production (Million Tons) 1979	1985	1990	1995
New Mines b/				
Montana:				
CX Ranch (Peter Kiewit)	--	2.0	4.0	4.0
Montco-Nance (Montco)	--	2.0	9.0	12.0
Totals		4.0	13.0	16.0
PRLAs				
Wyoming:				
Campbell County				
Bell Fourche (Wold Nuclear Co.)	--	--	c/	--
East Black Thunder (Arco)	--	--	--	--
North Antelope (Peabody)	--	--	1.6	2.3
Rochelle Area (Peabody)	--	--	d/	d/
South Gillette (Peabody)	--	--	2.0	3.2
Thunderbird Project (El Paso Energy Co.)	--	--	3.5	5.0
Thunderbird II (Wold & Jenkins)	--	--	5.2	32.0
Wildcat Creek Area (CONSOL)	--	--	4.5	24.0
Sheridan County				
Ulm Project (Woodson Oil Properties)	--	--	14.0	14.0
Converse County				
Dull Center (Peabody)	--	--	1.7	1.7
Sand Draw (Peabody)	--	--	5.0	5.0
South Antelope (Peabody)	--	--	3.6	3.6
South Powder River (Dixie Natural Res.)	--	--	2.2	2.2
Stevens North (Western Fuels)	--	--	.8	3.0
Stevens South (Western Fuels)	--	--	1.5	1.5
Totals	--	--	45.6	97.5

TABLE 2-2 concluded

Location and Name	Annual Production (Million Tons) 1979	1985	1990	1995
Exchanges [e]				
Wyoming:				
I-90				
Carter-Exxon (North Rawhide & Caballo)				
Gulf (Wildcat Creek)				
Wyodak (Wyodak Mine)				
Noncompetitive Leases (Northern Cheyenne)				
CX Ranch (CONSOL)	--	5.0	8.0	8.0
Greenleaf-Miller (Peabody)	--	--	4.0	6.0
Totals	--	5.0	12.0	14.0

[a] Final figures for 1980 production unavailable for inclusion into the draft.
[b] Youngs Creek Mine (Shell) located in Big Horn County not included (see Chapter 1).
[c] Mine life of 2 years projected for 1988 and 1989.
[d] Assumed to be intended as an extension to the Rochelle Mine.
[e] These exchanges are mine extensions and do not add to annual production.

TABLE 2-3
PROJECTED 1990 BUDGET LEVELS, BY ALTERNATIVE, FOR THE
COUNTIES, SCHOOLS, AND COMMUNITIES THAT
WOULD BE IMPACTED MOST HEAVILY BY FEDERAL
COAL LEASING IN THE POWDER RIVER REGION
(Rounded to the nearest $100,000; Includes Debt Servicing)

	Alternatives			
	1 a/	2 b/	3 b/	4 b/
	($1,000)	($1,000)	($1,000)	($1,000)
Powder River County				
Revenues	3,800	5,200	5,200	6,300
Expenditures	3,800	5,500	5,500	7,200
Balance	0	-300	-300	-900
Powder River County Schools				
Revenues	2,000	6,100	6,100	7,600
Expenditures	2,000	2,900	2,900	3,700
Balance	0	3,200	3,200	3,900
Broadus				
Revenues	200	400	400	500
Expenditures	200	300	300	600
Balance	0	100	100	-100
Rosebud County				
Revenues	9,800	9,800	9,800	9,800
Expenditures	9,800	10,900	10,900	12,100
Balance	0	-1,100	-1,100	-2,300
Rosebud County Schools				
Revenues	9,100	9,100	9,100	9,100
Expenditures	9,100	10,100	10,100	11,200
Balance	0	-1,000	-1,000	-2,100
Ashland c/				
Revenues	--	--	--	--
Expenditures	--	--	--	--
Balance	--	--	--	--
Campbell County				
Revenues	26,600	32,300	32,300	37,900
Expenditures	26,600	28,000	28,000	29,300
Balance	0	4,300	4,300	8,600
School District #1				
Revenues	69,800	80,100	80,100	90,200
Expenditures	69,800	73,400	73,400	76,800
Balance	0	6,700	6,700	13,400

Table 2-3 concluded

	Alternatives			
	1 a/	2 b/	3 b/	4 b/
	($1,000)	($1,000)	($1,000)	($1,000)
Gillette				
Revenues	19,800	20,300	20,300	20,800
Expenditures	19,800	20,800	20,800	21,800
Balance	0	-500	-500	-1,000

a/ These are the baseline budget levels that are expected to exist without additional Federal Competitive Leasing. Expenditures were projected from actual FY 1979/1980 budgets (including debt servicing) on a per capita basis in order to maintain the per capita spending levels of FY 1979/1980. It is assumed that revenues will equal expenditures through additional taxes, user fees, grants, royalties, or debt.

b/ The additional expenditures above baseline expenditures, which are required to maintain FY 1979/1980 per capita spending levels for additional populations, were projected from actual FY 1979/1980 budgets (including debt servicing) on a per capita basis. Additional revenues above baseline revenues for Powder River and Rosebud counties are based on revenue to coal production ratios derived from a baseline run of the coal town model, which was generated by Keith Bennett. Additional revenues for Campbell County were generated by a coal revenue model developed by Thomas F. Stinson at the University of Minnesota.

c/ Because Ashland is an unincorporated community without a formal budget it is difficult to make reliable budget projections.

TABLE 2-4

COAL TRACTS AND RECOVERABLE RESERVES BY ALTERNATIVE

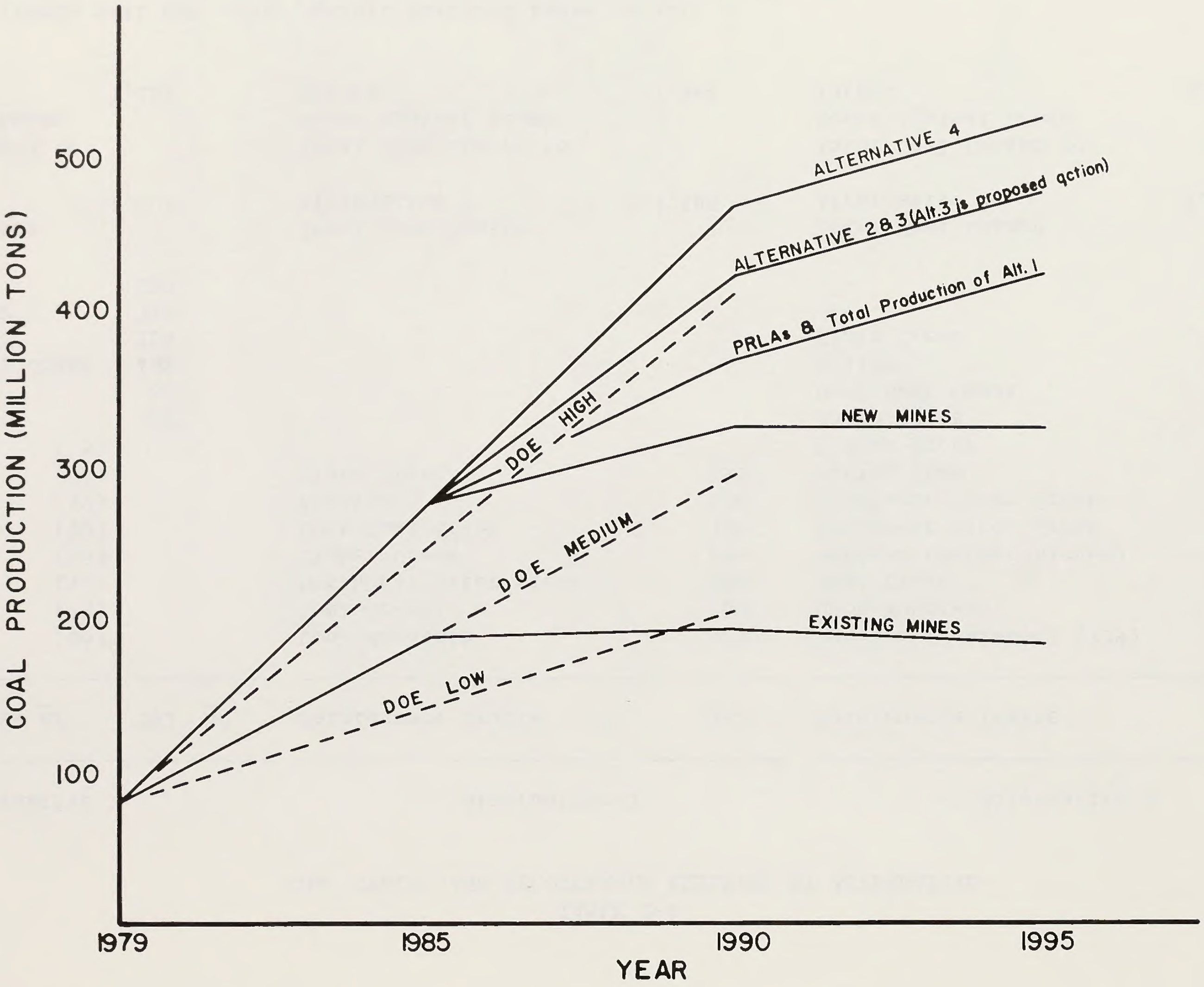
Alternative 2			Alternative 3		Alternative 4	
Maintenance Tracts a/		342 b/	Maintenance Tracts	342	Maintenance Tracts	342
Colstrip A&B	(36)		Cook Mountain	178	Ashland (Coalwood) (239)	
Colstrip C	(19)		Coal Creek	60	Cook Mountain	178
Colstrip D	(43)		Northwest Otter Creek	139	Coal Creek	60
Fortin Draw	(45)		Timber Creek	184	Ashland (Decker-Birney)	119
Little Rawhide	(90)		Duck Nest Creek	316	Northwest Otter Creek	139
North Decker	(59)		Keeline	174	Southwest Otter Creek	130
Spring Creek	(35)		Kintz Creek	193	Spring Draw	383
West Decker	(5)				Timber Creek	184
Cook Mountain		178			Rocky Butte	445
Coal Creek		60			Duck Nest Creek	316
Northwest Otter Creek		139			Keeline	174
Timber Creek		184			Kintz Creek	193
Duck Nest Creek		316				
Spring Draw		383				
Total Coal Leased Alternative 2		1,603	Total Coal Leased Alternative 3	1,586	Total Coal Leased Alternative 4	2,663
Total Coal Leased to Count Against Lease Target		1,261	Total Coal Leased to Count Against Lease Target	1,244	Total Coal Leased to Count Against Lease Target	2,321

a/ Maintenance tracts will not count against regional lease target.

b/ All figures represent uncommitted federal coal reserves in millions of tons.

FIGURE 2-1

POWDER RIVER REGIONAL COAL ANNUAL PRODUCTION TO 1995



CHAPTER 3

DESCRIPTION OF THE AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes the affected environment for the area of the Powder River Region that is necessary for assessing effects of the No-Action Alternative in Chapter 4. Climate, physiographic province, geologic structure, fisheries, prime farmland, wetlands, floodplains, and threatened or endangered plant species either would not be regionally affected or do not occur within the region. Therefore, no assessments on these elements were deemed necessary.

Areas of land have been identified as possible alluvial valley floors (AVFs). Although these possible AVFs are not excluded from consideration for leasing, the OSM would make a final determination prior to the mine and reclamation plan approval regarding their existence and whether mining would be permitted in that area of the tract. Individual tract profiles (Northwest Otter Creek, Southwest Otter Creek, Ashland (Decker-Birney), Keeline, Kintz Creek, and Duck Nest Creek) show location of these possible AVFs (BLM, 1981).

GEOLOGY AND OTHER MINERALS

The economic coal beds are found in the Tongue River member of the Paleocene (65 to 55 million years ago) Fort Union Formation and the Eocene (55 to 38 million years ago) Wasatch Formation. Description and relationships of the coal bearing formations may be found in Brown (1962), and Matson and Pinchock (1977).

Faults and folds are rare and mostly confined to the west flank of the region along the edge of the Bighorn Mountains. The region is classified as aseismic (no earthquake tendency) (Simon, 1972).

The coal beds found in the region are generally thick and of very wide areal extent. Detailed discussions concerning the quantity, quality, correlations, and locations of the coal beds may be found in Glass (1976 and 1980); Matson and Blumer (1973); Matson and Pinchock (1977); Cole, Matson and Pederson (1980); and the Tract Profiles (BLM, 1981).

Abundant plant and invertebrate fossils are found in the Tertiary coal bearing rocks. Vertebrate of other significant fossils are rare and known from only a few locations. Those known fossils contained within the region have no exceptional scientific interest or value (BLM, 1979a; USGS, 1979).

Other minerals of economic importance found in the region are oil and gas, uranium, and bentonite (see discussion in Chapter 1).

WATER RESOURCES

Most of the water used in the Powder River Region comes from the Yellowstone River and its tributaries the Tongue River and Powder River; and the Cheyenne River and its tributary the Belle Fourche River; and the North Platte River. The discharge of these streams is adequate to supply present needs within the region. Total water use in 1980 was about 518,140 acre-feet. The largest use, 81 percent, was for irrigation. Coal mining used 1,700 acre-feet, and municipal water use was 23,000 acre-feet. About 70 percent of the municipal water used is discharged as treated sewage effluent (BLM, 1979a).

Ground Water

The occurrence of ground water within the Montana and Wyoming areas of the Powder River Region is similar and therefore both areas will be assessed as a single unit. Ground water is used for domestic and stock watering, municipal supplies, secondary recovery of oil, irrigation, mining, milling, and other industrial uses.

Aquifers are contained in formations with a total thickness of more than 9,000 feet. The deepest aquifers are in the Madison aquifer system that includes geologic units from Precambrian-age basement rocks to Cretaceous-age shales (BLM, 1981, pp. 3-2). The most important aquifer within this system is the Madison Group, which is present in an area of over 180,000 square miles including the Powder River Region. The Madison aquifer is composed almost entirely of carbonates that are mostly dense with low porosity and permeability. However, well developed zones of secondary porosity and permeability and localized beds of coarsely crystalline dolomite exist. Yields of more than 1,000 gallons per minute (gpm) are available where caverns, fractures, and crystalline zones are present; where they are absent, yields are much lower.

Most of the recharge to the Madison aquifer system is in outcrop areas in the Black Hills and Bighorn Mountains. The water becomes progressively more mineralized with increasing distance from the recharge areas. Discharge is from springs, wells, and seepage into stream valleys.

Water from the Madison aquifer system is used by the towns of Douglas and Gillette, Wyoming.

A sequence of Cretaceous shale up to 5,500 feet thick with very low vertical hydraulic conductivity overlies the older rocks, including the Madison aquifer system. These shales serve to separate the Madison aquifer system from shallow aquifers. The shallow aquifers are contained in the Fox Hills Sandstone and Hell Creek, Fort Union, Wasatch, and Lance Formations. (BLM, 1979a, Figure R2-4).

Ground water in the above formations is available at relatively shallow depths in most of the region in sufficient quantity for domestic and stock watering uses. The quality of the water in shallow aquifers is highly variable. Larger yields and better quality water are usually more available in the lower part of the shallow aquifers than in the upper part. Stock and domestic wells are commonly less than 1,000 feet deep and yield about 25 gpm. Industrial and municipal wells are commonly deeper than 1,000 feet and are often 3,000 to 5,000 feet deep and open to several formations. These deeper wells can yield more than 100 gpm.

The aquifers most commonly used in the region are sandstone and coal beds in the dominantly fine-grained Fort Union Formation. (USGS, 1979, pp. II-18.) The sandstone beds are lenticular and generally do not extend more than a few miles; whereas, coal aquifers are more areally extensive. The Fox Hills-Hell Creek aquifer, which underlies the Fort Union Formation, is the most extensive unit where yields of 100 to 200 gpm can be obtained. Clinker zones in the Fort Union Formation are very permeable; however, they are usually above the water table.

Recharge to the shallow aquifer system is mainly in upland areas through sandy zones of the Fort Union Formation, coarse-grained alluvium, and clinker.

Downward movement of recharge water in the shallow aquifer system is retarded by shale layers of low permeability causing the static water level in wells in recharge areas to be progressively lower with increasing depth of the well. Pumping lifts in deep wells may be several hundred feet greater than in adjacent shallow wells. Perched zones are common, and where impermeable beds are exposed, ground water is discharged as seeps and springs.

The chemical quality of the water from the shallow aquifers is highly variable. DS concentration ranges from 100 to more than 8,000 mg/L, but Hodson and others (1973) state that the DS content of water from most wells is between 500 and 1,500 mg/L. As water moves downward through the formations, the chemical type is changed by cation-exchange softening and sulfate reduction. The water from wells less than 200 feet deep generally is hard (calcium-magnesium-sulfate type) whereas, water from deeper wells generally is soft (sodium-bicarbonate type) (BLM, 1979a, Fig. R2-12). Water from the deeper wells is typically lower in total DS, indicating that precipitation occurs as the water moves downward. Ranges of trace elements and radiochemical analyses of water from shallow aquifers in Wyoming are given in the Eastern Powder River Coal ES (BLM, 1979a, Table R2-7).

Quaternary alluvium contains the shallowest aquifers in the region. Most alluvium is too fine-grained to yield much water; however, clean, coarse-grained material along rivers may yield up to several hundred gpm. Recharge to alluvial aquifers is from precipitation, runoff, and upward seepage from underlying formations. Discharge is by evapotranspiration, seepage into streams, pumpage, or ground water flow to older formations.

The water table in alluvial aquifers can slope toward or away from a stream depending on whether the stream is gaining or losing water in that area.

The quality of the water in most alluvial aquifers is poor, with DS concentration exceeding 8,000 mg/L. The chemical type of the water is similar to that in the upper part of the shallow aquifers but may be higher in DS due to concentration by evapotranspiration

Municipal water supplies within the towns of Ashland, Broadus, and Gillette are adequate for the present population.

In some areas of Wyoming, uranium mining may result in serious and long-lasting degradation of water quality. Leachate from tailing ponds is well beyond the safe limits of radioactivity for animals or humans. Stock or humans using water from wells or streams down gradient could be exposed to dangerous levels of radioactivity. Increasing the danger is the nondegradable and cumulative character of this type of contamination. Plants, crops, and river biota accumulate and concentrate radium 226. Levels of radium 226 in some wells near uranium mines vary from less than 10 to 50 picocuries per liter, and surface-water levels are as high as 35 picocuries per liter. U.S. Public Health Service limits are 3 picocuries per liter.

Surface Water

Montana

The major tributaries to the Yellowstone River that drain the Montana part of the region are Armells and Rosebud creeks and the Tongue and Powder rivers. Pumpkin, Otter, and Hanging Woman creeks are major tributaries to the Tongue River, and Mizpah and the Little Powder River are major tributaries to the Powder River. Streams that are perennial, or nearly so, include the Tongue and Powder rivers and Rosebud, Otter, and Hanging Woman creeks. Many streams are ephemeral (flow in response to rainfall or snowmelt). However, most stream channels have intermittent reaches that flow for long periods each year at very low rates.

The average runoff ranges from about 0.01 cubic feet per second per square mile (cfsm) to 0.06 cfsm from the larger drainages with the exception of the Tongue River which averages 0.35 cfsm at the state line near Decker, and 0.08 cfsm at Miles City. High runoff usually results from snowmelt and spring rains, and the extreme low-flow period is from October through January. Average flow for the Yellowstone River at Miles City is 11,605 cubic feet per second (cfs) (USGS, 1980a). Surface runoff is depleted by numerous stock-water reservoirs and spreader systems on small tributaries. Much of the flow that originates within the region is depleted by storage, evapotranspiration, and seepage.

The chemical quality of water in most small streams is poor most of the time (BLM, 1979a). The base-flow component (water that enters streams from the ground water system) of streams that drain the more arid areas contain DS concentrations ranging from 1,500 to 5,000 milligrams per liter (mg/L), mainly sodium sulfate. Rosebud Creek and the Tongue River are the only major streams that regularly contain DS concentrations less than 1,000 mg/L, mainly calcium bicarbonate; however, water in the Tongue River deteriorates in the downstream direction owing to irrigation return water that contains greater concentrations of DS, mainly sodium sulfate (BLM, 1979a). DS for the Yellowstone River averages about 480 mg/L below Miles City. Sediment yields range from 0 to 1.2 acre-feet per square mile per year (BLM, 1981). Fecal coliform count in colonies per 100 milliliters for October 1978 through September 1979 ranged from 960 to 30 in the Tongue River at the state line near Decker and 18 to 2 in the Yellowstone River at Forsyth (USGS, 1980a).

Wyoming

The Wyoming area of the region is drained to the east by the Belle Fourche and Cheyenne rivers, to the north by the Little Powder River, to the west by tributaries to the Powder River, and to the south by tributaries to the North Platte River. Most streams are ephemeral. However, many stream channels have intermittent reaches that flow for long periods each year at very low rates. Streams seem to be drier (closer to truly ephemeral) in the southern part of the region and become progressively wetter to the north (BLM, 1979a).

The average runoff ranges from about 0.01 to 0.02 cfsm from the larger drainages. The flow of the North Platte River at Casper, which is partially controlled by reservoirs, averaged 1,360 cfs in 1979. High runoff usually results from snowmelt and spring rains, and the extreme low-flow period is from October through January. Surface runoff from the region is depleted by numerous stock-water reservoirs and spreader systems on small tributaries (BLM, 1979a). Much of the flow that originates within the region is depleted by storage, evapotranspiration, and seepage. The quantity of flow that leaves the eastern Powder River Region via the large streams represents about 42 percent of the flow that originates on each square mile within the region (BLM, 1979a).

The chemical quality of water in most streams is poor most of the time. The base-flow component (water that enters streams from the ground water system) of most streams contains DS concentrations ranging from 1,500 to 5,000 mg/L, mainly sodium sulfate. DS for the North Platte River averages about 400 mg/L below Casper. Fecal coliform count in colonies per 100 milliliters for October 1978 through September 1979 ranged from 130,000 to 12,000 in Goose Creek below Sheridan, 10,000 to 11 in the North Platte River below Casper, 670 to less than 1 in the Cheyenne River near Riverview, 600 to 2 in the Belle Fourche River below Moorcroft, and 120 to 2 in the Little Powder River above Dry Creek near Weston (USGS, 1980b). Sediment yields range from about 0.1 to 3 acre-feet per square mile per year (BLM, 1979a).

AIR QUALITY

A detailed description of air quality in the region may be found in the Technical Report available from the Casper District BLM Office (Radian, 1980).

Background concentrations for TSP, NO_2, SO_2, non-methane hydrocarbons (NMHC), and ozone

(O_3) were generated from monitoring data obtained within the region. Data on other criteria pollutants, carbon monoxide (CO) and lead (Pb), were gathered from nearest available sites, which are Billings, Montana (about 120 miles from Ashland, Montana), and Steamboat Springs, Colorado (about 400 miles from Gillette, Wyoming), respectively (Radian, 1980).

The region is a Federal Class II PSD area. However, the Northern Cheyenne Indian Reservation, which is a Class I PSD area, is bordered by the region on the north, east, and south sides.

Appendix A (Table A-1) shows the maximum allowable increases for the PSD of air quality. Appendix A (Table A-2) shows the federal, Montana, and Wyoming ambient air quality standards.

The rural TSP annual geometric mean for the region is about 16 $\mu g/m^3$. In and near populated areas and existing industrial activities, particulate levels are significantly higher than background levels. Particulate readings near existing mining activities are higher than background levels due to fugitive dust generated by mining operations. TSP returns to rural background levels several miles downwind as a result of particulate deposition.

Violations of the annual and 24 hour TSP standard occurred in 1979. In Wyoming the east monitor site at Black Thunder Mine exceeded annual and 24 hour TSP standards (412 and 113 $\mu g/m^3$, respectively). The Belle Ayr Mine sites 4 and 5 and Eagle Butte site 4 exceeded the 24 hour TSP standard (188, 167, and 152 $\mu g/m^3$, respectively). In Montana, the Colstrip area does not meet NAAQS for particulate and has been designated a nonattainment area.

Rural annual SO_2 and NO_2 background levels are about 1 and 16 $\mu g/m^3$, respectively. The 3-hour national standard for NMHC was exceeded five times at Colstrip in 1976 with a maximum of 0.87 parts per million (ppm). These high readings are attributed to heavy vehicular traffic primarily in the early morning. CO, Pb, and O_3 concentrations were less than 50, 80, and 75 percent, respectively, of the NAAQS.

Visibility greater than 60 miles is common. Significant reductions in visibility are generally weather related.

SOILS, VEGETATION, AND RECLAMATION

Soils of the region have developed mostly with short-grass vegetative cover common to the semiarid Great Plains. Due to prevailing climate and vegetative conditions, organic matter is accumulated slowly, and soils have developed with light-colored surfaces. Light colored soils generally indicate low organic matter content and fertility levels. Subsoil colors are normally light brown or reddish brown, and are often influenced by white, powdery carbonate accumulations caused by low rainfall and insufficient leaching. Soils of the region are mostly residual (developed in place) and formed from weathered sedimentary bedrock, mostly sandstone and shale. Most soils in the region have a fairly good reclamation potential based on reclamation success of other mines in the region. The "fairly good" category means on a scale of 1 to 10 these soils rate a "7". Site-specific information on soils and reclamation potential is available in the Tract Profiles (BLM, 1981); Wyoming General Soils Map (University of Wyoming, 1977); and *Rehabilitation Potentials and Limitations of Surface-Mined Land in the Northern Great Plains* (Packer, 1974).

The major vegetation types in the Powder River Region are shown on Table 4-3, along with acreage. Refer to the Tract Profiles (BLM, 1981) for vegetation map and common species list for the vegetative types. No threatened or endangered plant species have been identified within the region (BLM, 1981; Dorn, 1980).

WILDLIFE

Physical boundaries used in assessing wildlife impacts are the Decker, Colstrip, and Otter Creek areas in Montana, and antelope (and corresponding deer) hunt areas 24 and 101 (21), 17, 18 and 19 (17 and 18) and 23 (19 and 20) in Wyoming (see Appendix B). Acres of habitat for these areas are shown on Table 3-1.

Montana

Detailed population data is not available for Montana.

In the Colstrip area big game may well be below their numbers of 1976 following the two severe winters of 1977-78 and 1978-79 (Wentland, 1980). Mule deer habitat use is heaviest in areas south and east of Colstrip. This area is fair to poor antelope habitat. Mule deer are common on the breaks along both sides of Otter Creek. Most deer appear to winter on the Custer National Forest. Antelope are common on the midslope areas between Otter Creek valley and the National Forest boundary. The heaviest yearlong concentration in the Otter Creek area appears to be on the west side of the creek, south of the confluence of Three Mile Creek and Otter Creek (Martin, 1980). The West Decker and Spring Creek mines include or are directly adjacent to important winter mule deer and antelope range. During the severe winter of 1977-78, approximately 405 mule deer and 375 antelope used these areas (Phillips, 1979).

Sharp-tailed grouse are abundant (11 leks) in the Colstrip area. The habitat consists of pine groves which provide escape and thermal cover while native grasslands and cultivated lands provide nesting cover and food habitat. The grouse have established new leks on unmined areas near Colstrip Mine and are nesting on successfully reclaimed areas. Twenty sharp-tailed grouse leks have been located in the Otter Creek area. This amounts to .22 leks per square mile compared to .12 leks per square mile in the Colstrip area. Average male attendance was about 18 per lek in 1980 (Martin, 1980). One sage grouse lek exists on the Spring Creek lease, but under mitigation agreement between Montana Fish and Game Department and NERCO, this lek area was determined unsuitable for mining with the exception applied (personal communication, Richard Zander, BLM, Miles City, 1981).

Red-tailed hawks are the most common raptor in the Otter Creek area with eight nests known to occur. Seven golden eagle nests are in this area but only one nesting pair was observed in 1980. Two prairie falcon eyries exist with one being active in 1980 (Martin, 1980).

The bald eagle is a winter resident of the area. Peregrine falcons are likely spring and fall migrants through the area. Black-footed ferrets may occur in the area in and near black-tailed prairie dogtowns.

Wyoming

The majority of coal mining related surface disturbance is occurring in antelope hunt areas 24 and 101 with six mines operating in the area (Appendix B (Figure B-1), and the Regional Activity Map). The Gillette-Orin Junction main line railroad bisects these two areas, and because it is fenced, it severely restricts east-west movement. Access roads to the mines intersect the railroad seven times and subdivide hunt area 24 into several small pastures. Movement between these pastures is severely restricted by traffic, fences along access roads, and the railroad. Seasonal movement is southward in the fall and northward in the spring. Approximately 200 to 300 antelope have wintered in the vicinity of Keeline and Kintz Creek tracts.

Two mines are currently located in antelope hunt area 17 north of Gillette. Antelope distribute evenly throughout hunt area 17 with exceptions of the scoria hills and timbered areas along the Little Powder River which are occupied infrequently.

Mule deer use (deer hunt area 18) is heaviest in the rough scoria hills and timbered breaks along the Little Powder River. White-tailed deer are common in the Little Powder River valley. However, both species show little seasonal movement.

Population trends of big game are presented in Table 3-2. Most big game herds in northeastern Wyoming suffered heavy winter losses following the winters of 77-78 and 78-79.

Sage grouse are the most common upland game bird in Campbell County. Forty-one leks are known to exist in the county with 16 of these existing in the area southeast of Gillette (antelope hunt areas 24 and 101). Five of these leks have been abandoned and two others destroyed by coal mining related activities since 1975 (Wyoming Game & Fish, 1979c). Sharp-tailed grouse are common in the northern half of Campbell County with three lek sites known. Data for the remainder of the county are not available.

Golden eagles, red-tailed hawks, ferruginous hawks, and great-horned owls are the most common nesting raptors in Campbell County. Available data indicate a minimum of 90 pairs of nesting golden eagles, 21 pairs of red-tailed hawks, and 21 pairs of great-horned owls. There are 13 pairs of golden eagles nesting on or within ½ mile of active mines or areas leased for further development.

The bald eagle and the black-footed ferret are listed as endangered by Fish and Wildlife Service and occur within Campbell County. The bald eagle is a common winter resident. The black-footed ferret is considered rare since there have been few reported sightings. However, no habitat has been designated as critical for either of these threatened or endangered species. No other threatened or endangered animal species are known to exist in the Wyoming area.

CULTURAL RESOURCES

Cultural resources within the region include evidence of man's activities for the past 12,000 years (BLM, 1979b, pp. 4-27). Specific types of cultural resources known are stratified sites resulting from repeated occupation of a locality, bone beds from communal hunts when large numbers of animals were killed, stone circles generally known to be associated with skin-covered dwellings of late prehistoric and historic Indians, rock art, ceramic sites where pottery is found, quarries where raw material for stone tools was collected, lithic scatters that provide evidence of short-term subsistence activities, rock shelters, burials, rock cairns or piles of rocks of debatable function, battlefields, homesteads, mines, and trails (BLM, 1979a; USGS, 1979). Appendix C shows the identified cultural sites for the Powder River Region.

VISUAL RESOURCES

Intrusions in an area affect the form, line, color, and texture of the landscape. Intrusions are classified as high, medium and low depending upon the amount of contrast with the existing landscape. Intrusions of high contrast would include open pits, coal silos and conveyors, structures on the skyline, large reflective surfaces, and large areas of surface disturbance. Intrusions of medium contrast would include access and haul roads, railroad lines, power lines, drilling rigs, and oil wells. Intrusions of low contrast would include fence lines, pipelines, and small areas of surface disturbance.

Montana

This area is characterized by rolling uplands dissected by steep-sided valleys. Local rugged hills and ridges are capped by resistant sandstone and clinker. Badlands have been formed in easily eroded shales. The region is drained by northward flowing tributaries of the Yellowstone River (see Regional Activity Map). Scenic quality ratings and management classes have not been established for this area of Montana; however, potential is for scenic quality Classes B and C, and management Classes III and IV with some areas of Class II possible (VRM Manual 8400 and Appendix D).

Wyoming

This area is characterized by low rolling hills and flat plains sometimes broken by canyons, buttes, and breaks. Scoria outcrops provide some reddish contrast to the landscape. Water is scarce and rarely a dominant feature. This area is largely scenic quality Class B or C and management Class III or IV. A management class map for Campbell and Converse counties is included in the Eastern Powder River Coal ES (BLM, 1979a).

LAND USE

Agriculture is the primary land use in the region (USGS, 1979). Most of the land is used as range for cattle and sheep. Farming consists mainly of dryland hay, both grass and alfalfa, or grain. Some flood irrigation of hay and grain fields occurs along stream bottoms. Other land uses and designations include mining, oil and gas, transportation networks, national forest, Indian reservations, recreation areas, and urban areas.

Agriculture

In Montana 87 percent of the land in the counties within the region is used for agricultural purposes (USDA, Montana Department of Agriculture, 1978). Of that total land, 88 percent is rangeland, 6 percent dryland farming, 1 percent irrigated and the remainder miscellaneous agricultural uses. The acres within these types of land uses are shown on Table 3-3 by county. Productivity on these lands can only be estimated because of flucuations caused by climate, markets, and operational decisions. In 1979 there were about 279,000 cattle within the region. Cropland productivity average is 1.9 tons per acre for hay, 25.0 bushels per acre for wheat, 35.8 bushels per acre for barley, and 45.3 bushels per acre for oats based on 1979 crop production figures.

Also, in Wyoming 87 percent of the land in the counties within the region is used for agricultural purposes (USDA Wyoming Crop Production Reporting Board, 1978). Of that, rangeland for cattle and sheep accounts for 90 percent, dryland farming 5 percent, irrigated land 1 percent and the remainder is in miscellaneous agricultural uses. The acres within these types of land uses are shown on Table 3-3 by county. Productivity on these lands can only be estimated because of flucuations caused by climate, markets, and operational decisions. In 1979 there were approximately 438,000 cattle in Wyoming. Cropland productivity average is 1.48 tons per acre for hay, 22.5 bushels per acre for wheat, 30.2 bushels per acre for barley and 44.2 bushels per acre for oats based on 1979 crop production figures.

There are no prime farm or wet lands (USDA, SCS, 1981).

Other Land Uses

Land use for oil and gas, power plants, refineries, and mining of coal, bentonite and uranium is increasing in the region. In 1980, 76,338 acres in Wyoming and 23,519 acres in Montana were included in these types of activities.

RECREATION

The Powder River Region is comprised mostly of privately owned surface, which limits public access and use. Recreational use is confined to the developed sites in the region or the national forests on the fringes of the region. The present number of facilities are adequate to meet current use or demand.

Montana

Hunting occurs throughout the area and receives more participation than any other single recreational activity. Big game hunter success is high (see Appendix E); approximately 75 percent for antelope (Montana Fish and Game, 1978). Other outdoor recreation opportunities include fishing, water sports, camping, picnicking, hiking, winter sports, historic interpretation, and municipal parks (Montana Fish and Game Department, 1978; USDA, Committee for Rural Development, 1975; USDA, Big Horn County Committee for Rural Development, 1976; USDA, Soil Conservation, 1976; USGS, 1979).

Although there are no designated wilderness areas, the Forest Service (FS) has a wilderness proposal, the Tongue River Breaks Roadless Area, in Custer National Forest (USDA, RARE II, 1979). Also, BLM has three proposed wilderness areas: the Tongue River Breaks Contiguity (adjacent to the FS proposal), Zook Creek, and Buffalo Creek (both located between Ashland and Decker) (BLM, 1980a).

Wyoming

Like Montana, hunting is the major recreational activity with high success ratio of hunters to harvest (over 90 percent for antelope) (see Appendix E). A like variety of outdoor recreation opportunities are also available (BLM, 1979a; Wyoming Recreation Commission, 1975 and 1980; Wyoming Game and Fish, 1977a and b, 1978a and b, 1979a and b, Campbell County Recreation Board, 1974; City of Gillette, 1978).

The FS has proposed the Laramie Peak (Medicine Bow National Forest) and the Seven Brothers (Bighorn National Forest) wilderness areas (USDA, RARE II, 1979). The Cloud Peak primitive area is managed by the FS (Bighorn National Forest). BLM has three areas under study for possible wilderness designations: Fortification Creek (west of Gillette), Gardner Mountain and the North Fork of the Powder River (both located south of Buffalo) (BLM, 1980b). BLM also has a special management unit: the Middle Fork of the Powder River.

TRANSPORTATION

Railroads

BN operates three main lines on which unit trains travel within the Powder River Region. The northern line runs through Billings and Miles City, Montana, and into North Dakota and Minnesota. The central route runs through Sheridan and Gillette, Wyoming, and into Nebraska, Iowa, Missouri, and Illinois. The southern route runs through Orin Junction and Guernsey, Wyoming and into Nebraska and Colorado. The number of TPD along these lines in 1981 are shown on Table 3-4. These trains reflect both freight/passenger and unit coal train traffic loaded and empty.

A unit train, which contains 100 cars with a capacity of 100 tons each, is approximately 1 mile in length. At any given crossing it would take a unit train 3 minutes to pass traveling at 20 miles per hour and 12 minutes at 5 miles per hour (BLM, 1979a). At these two speeds, a crossing on the central route leaving the region would be interrupted for 1 hour 12 minutes and 4 hours 48 minutes, respectively. Data are unavailable for car-train accident rates for specific at-grade crossings. An average rate for a crossing with flashing lights has been predicted for a traffic volume of 1,000 motor vehicles per day. Table 3-4 shows the existing situations at four selected cities located along BN main lines.

Two proposed railroad lines, the Tongue River Railroad along the Tongue River in Montana and the Chicago Northwestern/Union Pacific line in southeast Wyoming, would also handle coal traffic.

Highways

In Montana, the major trafficways are Interstate 94, U.S. Highway 212, Federal Aid Primary (FAP) 39, U.S. Highway 312, and FAP 92. Outlying areas are connected by a system of county, FS, Indian reservation, and private roads. Appendix F (Figure F-1) shows the interstate, state, and federal aid primary and secondary road systems, and average daily traffic (ADT). Highway 212 from Ashland through the Northern Cheyenne Indian Reservation contains potholes, ruts, and shoulder deterioration creating traffic safety and nuisance problems. The Native Americans along with other local residents are concerned about the problems caused by heavy truck traffic along this route. The same situation exists along FAS 314 between 212 and Decker. This road was once surfaced but large traffic volumes and heavy loads have deteriorated it. This road is also a traffic safety and nuisance problem (Northern Cheyenne and Crow tribal councils).

In Wyoming, the major north-south trafficways are Interstate 25 and State Highway 59 (Regional Activity Map). East-west travel is largely on Interstate 90, U.S. 16, State Highway 387, and State Highway 20/26. Appendix F (Figure F-2) shows interstate, U.S., and state highways, and the ADT for the Wyoming area. A network of county and private roads connect outlying areas to these major transportation routes. There are grade separations along the BN line in Gillette, Casper, and along State Highway 59 (between Douglas and Wright), which allow train interruptions to avoid highway traffic. Roads in the region are often rutted and deteriorated from extensive use of heavy, energy-related equipment. Highways 59 and 387 are being upgraded.

NOISE

Noise was calculated by using the equations discussed in "Noise Impact Analysis" (Rau and Wooten, 1980). The affected zone encompasses areas in which the Ldn (decibels weighted on a day-night basis) exceeds 55 dBA ("A" weighted decibels). The 55 dBA is a standard set by the U.S. Environmental Protection Agency as a long-term limit for protection of health and welfare. A normal conversation is equivalent to 50 to 60 decibels.

Railroads

The distances from railroad track center line to the 55 dBA contour zone

Miles City, Montana (Northern Route)	2,500 feet
Gillette, Wyoming (Central Route)	2,100 feet
Newcastle, Wyoming (Central Route)	4,000 feet
Torrington, Wyoming (Southern Route)	3,400 feet

Highways

Noise levels were calculated using the equations discussed in "Noise Impact Analysis" (Rau and Wooten, 1980). The distance to the 55 dBA contour from the road center line has been calculated for the following cities within the

Gillette, Wyoming	250 feet
Sheridan, Wyoming	1,000 feet
Ashland, Montana	100 feet
Colstrip, Montana	100 feet
Decker, Montana	800 feet

SOCIOLOGY

Social Organization

Social organization is discussed for the three communities, Ashland (Rosebud County), Broadus (Powder River County), and Gillette (Campbell County), that would be affected from any of the alternatives described in Chapter 2.

Ashland and Broadus, Montana, (see Regional Activity Map) are rural communities and have received very little population increase over the past decade. Also, Ashland is an unincorporated community. In both communities interpersonal relationships are on an informal basis. Friendship networks are dense, which means a community resident knows just about everyone else in the community.

The Northern Cheyenne and Crow Indian reservations are located in the northwestern part of region (see Regional Activity Map). Since Ashland is located adjacent to the eastern boundary of the Northern Cheyenne Reservation, most of the town's occupants are Native Americans.

Gillette, Wyoming, has grown rapidly since the 1960s which has already changed the social organization considerably. Interpersonal relationships are formal. A community resident knows relatively few others in the community, and friendship ties are made on the basis of occupation, age, and religion (Laumann, 1973; Wellman, 1979).

Community Services and Facilities

Table 3-5 shows the existing levels of community services and facilities. Water and sewage facilities are adequate to support the present population (see Water Resources). Fire protection throughout most of the region is gained through a volunteer force.

Ashland (Rosebud County) does not currently have a public high school for non-Native Americans. Students from the area attend public school in Colstrip and Broadus.

Housing

See Table 3-6 for the existing number of dwelling units in the Powder River Region.

Attitudes

Overall, people who were interviewed within the region favored coal development. There was a higher level of unqualified support for coal development in Wyoming than Montana. Some residents stated they would be in favor only if it was certain the coal was needed to help meet the nation's energy requirements. The main reasons given for favoring coal development were the economic benefits and the need to develop domestic energy resources. Economic benefits stated pertained to increased employment and increased tax base. A common response was that the coal is needed to help reduce the amount of imported fuel. Environmental concerns expressed were regarding reclamation of the land, and water quantity and quality. Concern was also expressed regarding the impacts from the influx of population (especially in Montana). A more detailed description of attitudes within specific areas is given in the individual Tract Profiles (BLM, 1981).

ECONOMICS

Montana

Table 3-7 presents a synopsis of the existing 1980 economic environment for the Montana area of the region. Coal employment numbered 950 in Big Horn County, and 380 in Rosebud County, as reported by the Montana Employment Security Division of the Department of Labor and Industry. Actual coal employment for Powder River County is not discloseable; however, a baseline run from the Coaltown model, developed by Lloyd Bender and others at Montana State University, estimated Powder River County coal employment to be 15.

Wyoming

Table 3-8 presents a synopsis of the existing 1979 economic environment for the Wyoming area of the region. Coal employment numbered 1,672 in Campbell County, 155 in Converse County, and 302 in Sheridan County, as reported by the Wyoming Department of Economic Planning and Development (DEPAD).

TABLE 3-1
ACRES OF WILDLIFE HABITAT

Location	Acres
MONTANA	
Colstrip Area	288,000
Decker Area	256,000
Otter Creek Area	59,000
WYOMING Hunt Areas:	
Antelope 24 & 101	750,080
(Deer 21)	750,080
Antelope 17	1,099,520
(Deer 17 & 18)	1,758,020
Antelope 23	851,840
(Deer 19 & 20)	1,158,400

TABLE 3-2
POPULATION TRENDS
BIG GAME - CAMPBELL COUNTY, WYOMING

Antelope

Area 24	1975	1976 (% change)	1977 (% change)	1978 (% change)	1979 (% change) 75-79
Area Harvest	1,981	2,545 (+28.5)	1,937 (-23.9)	1,893 (-2.3)	1,226 (-38.2)
Pumpkin Buttes					
Herd Unit Harvest	5,821	6,391 (+9.8)	5,264 (-17.6)	6,305 (+19.8)	5,915 (0)
% Area Harvest of Herd Unit	34%	39.8	36.8	30	20.7
Area 17					
Area Harvest	3,018	2,983 (-1.2)	1,716 (-43.5)	1,627 (-5.2)	1,071 (-64.5)
Powder River					
Herd Unit Harvest	3,849	4,044 (+5.0)	2,687 (-33.6)	2,690 (0)	2,156 (-44)
% Area Harvest of Herd Unit	78.4	73.7	63.8	60.4	49.6
Mule Deer					
Area 21					
Area Harvest	978	878 (-10.2)	736 (-16.2)	498 (-22.3)	316 (-67.7)
Black Hills					
Herd Unit Harvest	4,404	3,759 (-14.6)	3,003 (-20.1)	1,807 (-39.8)	1,349 (-69.4)
% Area Harvest of Herd Unit	22.2	23.4	24.5	27.6	23.4
Area 18					
Area Harvest	3,828	2,178 (-43.2)	1,876 (-13.9)	1,069 (-43.1)	749 (-80.5)
Powder River					
Herd Unit Harvest	9,418	8,489 (-9.9)	6,206 (-26.9)	4,790 (-22.8)	3,671 (-62.1)
% Area Harvest of Herd Unit	34.3	25.6	30.2	22.3	20.4

TABLE 3-3
AGRICULTURAL LAND USE ACRES

County	Total Acres	Cropland	Range	Irrigated	Woodland	Miscellaneous a/
Wyoming						
Campbell	3,034,614	157,490	2,676,971	4,176	31,056	11,985
Converse	2,653,284	76,794	2,351,058	53,364	15,280	21,034
Sheridan	1,598,195	124,590	1,213,733	54,448	11,129	13,580
Johnson	2,620,817	43,768	1,861,688	40,495	8,683	17,977
Natrona	3,713,764	57,320	3,023,890	37,493	3,073	26,147
Crook	1,804,338	165,176	1,193,768	8,712	150,685	16,721
Weston	1,478,109	53,828	1,311,350	6,427	83,040	16,511
Total	16,903,121	678,966	13,632,458	205,115	302,946	123,955
Montana						
Big Horn	3,214,720	286,739	2,329,017	49,275	b/	b/
Rosebud	3,223,424	182,827	2,778,398	38,838	63,890	43,869
Powder River	2,104,128	165,988	1,353,409	9,106	13,737	11,777
Total	8,542,272	635,544	6,460,824	92,219	77,627 c/	55,646 c/
REGION TOTAL	25,445,393	1,314,520	20,093,282	297,334	380,573 c/	179,601 c/

a/ Includes farm buildings, pig lots, ponds, etc.
b/ Information Withheld.
c/ Big Horn County not included.

Sources: USDA, Wyoming Crop Reporting Board, 1978.
USDA, Montana Department of Agriculture, 1978.

TABLE 3-4
EXISTING TPD AND AT-GRADE CROSSING INFORMATION

		At-Grade Crossings		
		Daily Interruptions		Car/Train Accidents a/
Location	Trains Per Day	5 mph	20 mph	Per 100 Years
Miles City, MT	11	2 hrs 12 min	33 min	1
Gillette, WY	10	2 hrs	30 min	1
Newcastle, WY	24	4 hrs 48 min	1 hr 12 min	3
Torrington, WY	17	3 hrs 24 min	51 min	1 to 3

a/ Based on 1,000 vehicles daily.

Source: Trains per day information obtained from Peter Briggs, Burlington Northern (personal communication, 1981).

TABLE 3-5
EXISTING LEVELS OF COMMUNITY SERVICES AND FACILITIES

Service/Facility	Montana Rosebud County	Powder River County	Wyoming Campbell County	Natrona County
Law Enforcement (Sworn Officers)	14	4	56	124
Teachers	143	48	417	973
Physicians	3	1	20	96
Dentists	4	1	5	38
Hospital Beds	26 a/	0 b/	31 c/	282

a/ One hospital located in Forsyth.
b/ There is no hospital in Powder River County.
c/ Hospital operating at 52 percent capacity.

Sources: Powder River Comprehensive Plan (draft), 1981.
Rosebud County Plan, 1979.
Department of Economic Planning and Development.
Wyoming Department of Education, Wyoming Public Schools Fund Accounting and Reporting (1979-80).

TABLE 3-6
EXISTING NUMBER OF DWELLING UNITS a/

Montana b/	
Big Horn County	3,867
Hardin	1,360
Powder River County	1,123
Broadus	336
Rosebud County	3,787
Ashland District c/	248
Wyoming d/	
Campbell County	8,950
Gillette	4,650
Converse County	5,050
Douglas	2,210
Crook County	2,340
Moorcroft	415
Johnson County	2,960
Buffalo	1,635
Natrona County	27,200
Casper	19,400
Sheridan County	10,500
Sheridan	6,380
Weston County	2,830
Newcastle	1,420

---

a/ Includes mobil homes and multi-family housing.
b/ Estimate based on information from 1980 final census.
c/ Because Ashland is a small unincorporated town, census figures collected are for the surrounding district.
d/ Estimates based on the housing count from the 1980 preliminary census.

TABLE 3-7
THE EXISTING ECONOMIC ENVIRONMENT FOR THE MONTANA COUNTIES IN 1980

	Coal a/ Production (million tons)	Total b/ Employment	c/ Population	Local Expenditure Levels d/ County ($1,000)	Schools ($1,000)	Towns ($1,000)
Big Horn County	18.5	5,583	11,088	6,109.5		
School					9,892.3	
Hardin			3,288			778.1
Powder River County	.03	1,245	2,523	3,887.5		
School					2,025.8	
Broadus			715			162.3
Rosebud County	24.8	5,021	9,965	6,392.5		
School					5,911.7	
Forsyth			2,550			1,341.0
Ashland District			569			e/

a/ Miles City District Office, Miles City, Montana.
b/ Research and Analysis Section, Employment Security Division, Department of Labor and Industry, Helena, Montana.
c/ Preliminary 1980 census.
d/ Obtained from the respective counties, schools and towns. Includes debt servicing.
e/ Ashland is an unincorporated community without a formal budget.

TABLE 3-8
THE EXISTING ECONOMIC ENVIRONMENT
FOR THE WYOMING COUNTIES IN 1979

	Coal a/ Production (million tons)	Total b/ Employment	c/ Population	Local Expenditure Levels d/		
				County ($1,000)	Schools ($1,000)	Towns ($1,000)
Campbell County	41.0	12,453	23,200	13,681.1		
School District #1					35,885.2	
Gillette			11,500			10,122.0
Converse County	3.8	5,056	13,200	8,304.0		
School District #1					15,279.5	
Douglas			5,680			6,690.0
Crook County	-0-	1,461	5,200	3,467.4		
School District #1					4,578.5	
Moorcroft			1,010			384.0
Johnson County	-0-	2,099	6,600	2,062.3		
School District #1					5,646.8	
Buffalo			3,700			1,902.3
Natrona County	-0-	36,293	69,600	35,668.5		
School District #1					30,908.8	
Casper			49,300			41,792.5
Sheridan County	3.5	8,115	24,300	14,724.3		
School District #2					9,898.8	
Sheridan			14,700			7,143.8
Weston County	-0-	2,479	7,020	3,806.8		
School District #1			3,550		3,671.2	
Newcastle						1,662.8

a/ Published by the Wyoming Department of Economic Planning and Development.
b/ Published by the Wyoming Security Employment Commission.
c/ Estimate based on the 1980 population to employment ratio derived from the preliminary census from the U.S. Census Bureau. City estimates based on the 1980 town to county ratio.
d/ Obtained from the respective counties, schools and towns. Includes debt servicing.

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter presents the scientific and analytic basis used in the comparison of alternatives described in Chapter 2. Site-specific effects of the individual tracts are contained in the Tract Profiles (BLM, 1981), which are available from the Casper District Office upon request. Description of the affected environment was used in assessing the No-Action Alternative (Alternative 1) which was, in turn, then used as the new baseline to assess Alternatives 2, 3, and 4. Analyses are focused on 1990; however, the time frame expands to 1995 when necessary for the worst-case analysis. Analyses presented in this chapter were made based on the professional judgments of the resource specialists when other sources or references were unavailable. Discussions are presented on a resource by resource basis; however, some resource discussions have been broken down further by alternative as necessary for clarity.

Also included in this chapter are adverse impacts which cannot be avoided should coal leasing occur, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and irreversible or irretrievable commitments of resources.

GEOLOGY AND OTHER MINERALS

The only major impact to geology would be the mining of the coal. The direct impact to topography is insignificant in itself, but would impact wildlife and is assessed in the Wildlife section of this chapter. Table 4-1a gives annual coal production projected for 1990 under each alternative. Table 4-1b shows production amounts for federal reserves only.

UNAVOIDABLE ADVERSE IMPACTS

Removal of the coal beds and destruction of overlying strata.

SHORT TERM VS. LONG TERM

There are no short-term impacts associated with geology. The long-term impact would be the loss of the mined coal reserves for future use.

IRREVERSIBLE/IRRETRIEVABLE

Coal once mined and consumed would be irreversible. Coal not mined and left due to lack of technology would be economically irretrievable once the mining has passed it by. Coal lost would equal 10-15 percent of the reserve base available for each alternative (Table 1-1).

WATER RESOURCES

Ground Water

Impacts to the ground water resources would occur primarily in the vicinity of the mined area and would have little effect on the regional ground water systems. Impacts include removal or modification of aquifers, interruption of ground water flow during mining, modification of flow after reclamation, and changes in water quality.

The impacts of uranium mines on the water resources of the region are discussed in detail in environmental statements dealing specifically with individual uranium mine plans; therefore, no further discussion of the subject is included in this regional analysis.

Mining of new federal coal would result in the removal of the lowest coal aquifer mined and all aquifers above it. Coal beds are usually the most extensive shallow aquifers in the region; whereas sandstone aquifers in the overburden and interburden are usually lenticular beds of relatively small areal extent.

Reclamation regulations require that the overburden and interburden (spoil) be replaced in the mine to restore the area to as nearly its original condition as practical. The replaced spoil is usually moderately permeable unless it is unduly compacted during emplacement. Studies by Rahn (1975) indicate that dragline-laid spoil which undergoes gravity sorting and minimal compaction by machinery may be as much as a hundred times more permeable than scraper-laid spoil which is compacted by scraper wheels. Aquifers created by dragline-laid spoil can have a higher recharge rate and yield than the combined total of the original aquifers, while scraper-laid spoil aquifers may have lower recharge rates and yield than the original aquifers. Truck-shovel-laid spoil is in between in water-bearing characteristics. Thus the impact of removing aquifers in the mined areas can be mitigated by replacing spoil in a manner to create aquifers with water-bearing characteristics equal or superior to those of the original aquifers.

Coal mining would create a hole in the ground that will act as a large well if the mine extends below the water table. Water entering this "well" would be lost through evaporation, either naturally or as it is used for dust suppression or other mine purposes, or will be discharged to streams in dewatering operations. This discharge would create a lowering of water levels (cone of depression) in the vicinity of the mine. Pumping of standard-type wells to supply additional water for mine operations would increase the cone of depression.

The change in the water level surrounding the mine would depend on aquifer characteristics, recharge rates, and pumping rates. The greatest declines would be in the mine itself and would decrease with distance from the mine edges to negligible amounts within a few miles.

If the cone of depression caused by mining intersects a nearby stream, the hydraulic gradient of the water table can be reversed so that water moves from the stream toward the mine. A reduction in streamflow would result, but because of restrictions on mining alluvial valley floors and the generally low permeability of earth materials in the region other than alluvium, the reduction would be less than 1 percent.

Modification of ground water flow after reclamation results from breakup of the layering that generally occurs in native formations of the region and from modification of the slope of the land surface. In many parts of the region relatively impermeable shale layers interbedded with sandstone and coal cause perched zones of saturation to form. Where perching layers outcrop, springs or seeps occur. The replaced spoil is relatively uniform in composition so that vertical and horizontal permeability are similar, thereby eliminating perched zones and their springs and seeps and increasing recharge to the water table. The removal of springs and seeps from their former locations would affect the plants and animals that depended on the additional water at those locations. Springs and seeps might reappear at different locations after reclamation is completed or the extra recharge to the water table might discharge into streams. The overall impacts of mining would be to permanently change the pattern of ground water flow but mining would not permanently diminish the quantity of water available in the area of the mine.

The water in the spoil aquifer would be of poorer quality than the water in the original aquifers. This is because the disturbed spoil presents many fresh surfaces to percolating water and this causes solution of soluable minerals to occur at a higher rate. The solution rate would eventually return to normal levels; however, with the low levels of precipitation and recharge prevalent in the Powder River Region, this process may take many years, perhaps centuries. Contamination of ground water in spoil aquifers can be mitigated by requiring selective placement of saline spoil above the zone of saturation. The ground water occurring naturally in the region varies greatly in mineral content both areally and with depth at a given location. Spoil aquifer water varies also, but generally is two to three times as mineralized as water from undisturbed coal aquifers but typically is no higher in mineral content than the most highly mineralized ground water in the area (personal communication, N.J. King, USGS, 1981).

Water in spoil material typically contains calcium-magnesium-sulfate with lesser amounts of sodium and bicarbonate; whereas, water in the coal aquifers typically contains sodium-bicarbonate. Calcium-magnesium-sulfate water containing as much as 3,000 mg/L of dissolved solids generally is unsuitable for domestic use but should have no deleterious effects on livestock and wildlife. Water containing as much as 7,000 mg/L would be highly cathartic and would be marginal for use by livestock and wildlife. Ground water that is of the sodium-bicarbonate type and lower in dissolved solids usually can be obtained by developing wells in aquifers below the spoil aquifer. However, pumping lifts and costs would be greater if the mine is in a recharge area.

Because of the low sulfur content of coal in the region, no acid mine-water drainage problems are expected (BLM, 1979a). Also, trace elements and heavy metals normally are filtered out of the ground water in mined areas by coal wastes and other carbonaceous materials in the spoil.

Where spoil aquifers discharge into a nearby stream, the increased salt load from leaching of the spoil can be significant and contribute to the salinity of the stream. However, where discharge is indirect to the upper reaches of an ephemeral stream far from its confluence with a perennial stream, it may take decades or even centuries before any effects are noticed downstream. This is especially true where the natural DS concentrations of water in the alluvium underlying the stream is similar to that of the leachate from the spoil aquifer. The long-term effects of the movement of more highly mineralized water from the spoil aquifer into adjacent, undisturbed less mineralized aquifers is not clearly understood. However, a significant reduction in DS concentrations can be expected with increasing distance from the mined area as a result of the selective retention of ions on particle surfaces (Riffenburg, 1925; Qayyum and Kemper, 1962). Thus, degradation of water quality in areas adjacent to reclaimed spoil is expected to be a slow process, and it would be centuries, if ever, before deleterious effects become significant more than a few hundered feet from reclaimed areas.

Different aquifers that had poor hydraulic connection before mining would be connected through the spoil, allowing circulation if there were head differences (water pressure differences at higher and lower points) between the aquifers; however, this effect would also tend to decrease with increasing distance from the mine. Changes in hydraulic gradients in the vicinity of the mine would be insignificant when considering the total aquifer system.

Municipal water requirements due to additional population would increase up to 2,700 acre-feet per year for the region in 1990 (see Table 2-1). This increase would not have significant impact on the entire region but could have considerable impact on Ashland, Broadus, and Gillette, since it is anticipated that these towns would have the largest population increases. The following measures are being taken to mitigate these impacts. Ashland has a relatively new water system (4 years old) that has a capacity to supply more than twice the present population. The water system of Broadus is adequate to supply the present population and some increase; however, plans are being made to develop a new well field to supply the projected increased population expected by 1990. Gillette is developing a new well field (operational June 1, 1981) with the potential to supply 10 times the current municipal use. The quality of the water from this new well field is superior to that of the existing well field and would be blended to improve the quality of the present supply.

Surface Water

The surface outflow from the region would be reduced by 350 to 700 acre-feet per year (0.05 to 0.1 percent) but the impact would be negligible. Estimates of the reduction of surface outflow from the prospective lease tracts are based on field observations and are less than the projected increases in water use because much of the water intercepted and consumed by mining would otherwise be dissipated by evapotranspiration losses on site or en route downstream. Thus, use of this water for mining would, in part, merely exchange one form of consumptive use for another. The potential depletion of surface water that might result from large-scale ground water withdrawals cannot be quantified due to lack of data. Between 20 and 33 point-watering sources would be destroyed. Although the quantity of water lost would be insignificant, the loss of point-watering sources would be a deterrent to area use by wildlife and livestock until water sources would be restored.

Surface runoff from reclaimed areas may be altered slightly owing to temporary changes in infiltration rates. The effect would be relatively minor and would be short lived because infiltration on spoils would become similar to infiltration on native rangeland as root systems develop.

Discharge from coal-spoils aquifers may contain DS concentrations that are two to three times greater than those in the adjacent undisturbed aquifers (Van Voast and Hedges, 1975). This water could be cathartic and marginal for use by livestock and wildlife. Most of the discharge from spoils aquifers would occur as small springs and seeps in ephemeral stream channels, which would delay and reduce the effect of that discharge on the quality of water in perennial streams. The possible exception would be the Tongue River which may receive spoils discharge through the clinker. The upper limit of the potential increased dissolved load of the Tongue River that would result form the leaching of mine spoils (without additional leasing of federal coal, and assuming DS concentrations of spoils discharge is twice that from undisturbed aquifers) is estimated to be about 0.5 percent. The proposed leasing and development of additional federal coal could cause the DS concentrations of the Tongue River to increase 0.4 to 0.5 percent (a cumulative increase of 0.9 to 1.0 percent) depending on the alternative selected. Because Armells Creek would have the greatest area of spoils in relation to the size of the drainage, the dissolved load of Armells Creek near Forsyth, Montana, may be increased by as much as 4 percent owing to leaching of mine spoils. However, the increase in DS concentrations in Armells Creek, the Tongue River, and other tributaries to the Yellowstone River would cause the DS concentrations of the Yellowstone River to increase by less than 0.1 percent under Alternative 1, 0.03 percent under Alternatives 2 and 3, and 0.04 percent under Alternative 4. Increases in DS concentrations would have no significant impact on current uses of water or on aquatic biology downstream. In addition to increased concentrations of dissolved solids, sewage effluents typically contain fecal coliforms, suspended solids, nitrates, nitrites, chlorine, ammonia, and orthophosphates. The sewage effluent discharged to the North Platte River would increase about 20 percent at maximum cumulative development in 1990; however, dilution would be at least 60 to 1, which is more than adequate to prevent any significant impact to the aquatic biology downstream. The sewage effluent discharged to Goose Creek would increase nearly 40 percent by 1990, and dilution would be very low during low-flow periods in Goose Creek and the Tongue River; hence, sewage effluent could have a deterious effect on aquatic life in those streams. However, dilution would prevent any impact to the aquatic biology of the Yellowstone River.

National Pollutant Discharge Elimination System (NPDES) permits for all unnatural polluting sources must be issued by the appropriate State agencies (Wyoming Department of Environmental Quality or the Montana Department of State Lands).

Data show that concentrations of heavy metals in some of the spoils leachate are greater than in most of the natural surface water and exceed recommended maximum concentration for irrigation on a continuous basis, livestock use, public supply, and aquatic biota (BLM, 1979a). However, the data are not adequate to allow evaluation of potential hazards related to possible heavy metal contamination of streamflow by discharge from spoils aquifers.

Sewage effluent would increase in proportion to the quantity of municipal water used. As a result, increased salinity and harmful bacterial contamination would occur in the Tongue and North Platte rivers. The increase in DS concentrations resulting from increased sewage effluent would be about 0.5 percent in the Tongue River and 0.07 percent in the North Platte River. This would cause no significant impact to the aquatic biology downstream.

Restrictions on sediment transport from areas disturbed by mining activities (30 CFR 816.42 and 817.42) would result in reduced sediment yields from those areas. However, existing regulations do not apply to disturbances resulting indirectly from coal mining such as housing construction and related urbanization. Such off-site disturbances would cause sediment yields to double for 1 to 2 years and thereafter gradually decrease, returning to the predisturbance rate in 3 to 4 years. The decreased sediment yield from mined areas would offset increases resulting from urbanization; thus, impacts from increased erosion and sedimentation would be very local and short term.

UNAVOIDABLE ADVERSE IMPACTS

1) Removal of parts of certain aquifers would change the character of the aquifers in the mined area. Cumulative disturbance under Alternatives 2, 3, and 4 would affect a small (35,000 to 60,000 acres) part of the total area (25 million acres) and the effects would be only in the mined areas. At least 47 wells and eight small springs and possibly 100 wells and 10 springs (over Alternative 1) would be destroyed by mining; however, the wells could be replaced by deeper wells and new springs probably would eventually appear. There would be negligible effect on the regional ground water system.
2) Interruption of premining ground water flow would lower water levels in 58 to 81 wells (over Alternative 1) within a few miles of the mine, but the effect would be limited to the period of mining and would diminish with distance from the mine.
3) Modification of ground water flow by replaced spoil aquifer would eliminate perching conditions which created springs and seeps in cer-

tain areas. The effects would be limited to the area of the mine and would have negligible impact on the regional ground water system. Increased water use by the increased population resulting from mining new federal coal would cause a small lowering of ground water levels in the vicinity of municipal well fields.

4) Changes in ground water quality caused by leaching of spoil materials would increase DS concentrations in reclaimed areas possibly to two to three times the mining levels. The effects would be long term but would be largely local and the water would still be suitable for livestock.
5) Municipal use of water would increase up to 2,700 acre-feet (Alternative 4) per year. Increased consumptive use would decrease surface outflow by about 0.05 to 0.1 percent. The DS concentrations of streamflow in the region could increase by a maximum of about 4 percent, but the increase would be undetectable in the major rivers that carry water beyond the region.

SHORT TERM VS. LONG TERM

Ground water levels in the vicinity of the mines would be lowered during mining; however, they would return to near premining levels within a few years after reclamation. Reclaimed spoil aquifers contain two or three times the mineralization of the original aquifer and this would create a short-term impact on water quality from spoil aquifers. In the long term, the water would gradually return to approximately the same quality as the average quality in the removed aquifers.

Consumptive use of water by the increased population, which is assumed to be permanent, would reduce water yield from the region by less than 0.025 or up to 0.05 percent.

IRREVERSIBLE/IRRETRIEVABLE

Removal of aquifers and other strata in the mined areas would permanently destroy 35,000 to 60,000 acres of aquifers (.002 percent of total aquifers within the region) and alter conditions of ground water occurrence. Removal of perching layers would destroy eight to ten springs and several seeps. Forty-seven to 100 shallow wells would be permanently destroyed (Van Voast and Hedges, 1975).

Water consumed by the increased population would be irretrievable. Increased consumptive use at maximum development would be 2,700 acre-feet per year. Increased DS concentrations that result from increased sewage effluent would irreversibly increase the DS concentrations of receiving streams by as much as 0.07 percent, but water would still be suitable for all current uses.

AIR QUALITY

The direct effects from mining activities and the indirect effects of mining-related development (associated population and transportation growth) were assessed for the areas in which significant increases in concentrations above background levels are expected. These areas are the Decker area, the Colstrip area, and the Custer National Forest area and Gillette (Radian, 1981).

The significant pollutant emissions associated with the development of the proposed lease tracts and the accompanying secondary growth are TSP, NO_2, and SO_2. Impacts of emissions of the other criteria pollutants would be insignificant, and virtually unmeasurable on a regional scale (Radian, 1981). Mining activities generate significant quantities of TSP, and relatively small quantities of NO_2, SO_2, CO, NMHC, O_3, and Pb. Power plants in the affected region are significant sources of TSP, NO_2, and SO_2, while emitting smaller amounts of the other pollutants. The principal emissions from cities and towns are TSP, NO_2, and SO_2. Vehicular traffic may produce localized elevations of CO levels, but these emissions are not significant on a regional basis. Thus, the analysis of air quality will focus on the impacts on ambient levels of TSP, NO_2, and SO_2.

The models, meteorological data, receptor array, and vistas used in the air quality analyses are discussed in the Technical Report (Radian, 1981).

Characterization of the source emission is also discussed in the Technical Report (Radian, 1981). Included are the emission factors, control devices, and efficiencies. Also discussed are the major point and area sources which would be impacted by the proposed mines.

All pollutant sources must be evaluated to determine PSD applicability. Coal mines are subject to new source review for PSD only if nonfugitive emissions of any regulated pollutant exceed 250 tons per year after application of controls. Surface coal mines will seldom have the potential to exceed that level. This essentially eliminates the proposed lease tracts from the detailed PSD review process.

Therefore, PSD applicability is not discussed further.

Alternative 1

Annual TSP concentrations near existing mines in Montana and near Sheridan, Wyoming, would not exceed 25 $\mu g/m^3$ (33 percent of the Montana and federal standard and 40 percent of the Wyoming standard). In the vicinity of Gillette, Wyoming predicted concentrations would not exceed 40 $\mu g/m^3$ (53 and 67 percent of the federal and Wyoming standards, respectively). Near the Caballos Rojo and Cordero Mines, the TSP levels could be as high as 50 $\mu g/m^3$ (67 and 83 percent of the federal and Wyoming standards, respectively). Total TSP levels would be about 69,300 tons per year.

Emissions from Gillette are predicted to add less than 1 $\mu g/m^3$ to the background TSP levels in 1995. The interaction of the town, the surrounding mines, and the major roads entering Gillette would contribute less than 5 $\mu g/m^3$ to the background levels of 16 $\mu g/m^3$ outside of Gillette.

Other major source contributions include major roadways such as I-90 between Gillette and Moorcroft which adds 1 $\mu g/m^3$ or less to background levels, and the Wyodak and Neil Simpson power plants which would add less than 8 $\mu g/m^3$ to the background TSP concentration.

Predicted concentrations of NO_2 throughout the region would not exceed the state or federal ambient air quality standards in 1990 or 1995. Ambient concentrations in the vicinity of Gillette are predicted to be less than 48 $\mu g/m^3$ and regional impacts of emissions from the Wyodak and Neil Simpson power plants would be less than 35 $\mu g/m^3$. Roadways would contribute less than 3 $\mu g/m^3$ to the 16 $\mu g/m^3$ background level.

The interaction among all NO_2 sources would produce NO_2 concentrations no greater than 40 $\mu g/m^3$. Combined with the background level of 16 $\mu g/m^3$ total ambient NO_2 concentrations would reach 56 $\mu g/m^3$ which is 56 percent of the state and federal standards.

Predicted 1990 and 1995 SO_2 concentrations throughout the region are less than 26 $\mu g/m^3$ (including the 1 $\mu g/m^3$ background level), which is 32 percent of the federal standard and 43 percent of state standard. The highest concentrations would be in the vicinity of Neil Simpson and Wyodak power plants.

Alternative 2

Alternative 2 would not significantly increase the emissions from any town, roadway or power plant in the region. The impact of emissions from these sources would not noticeably change from Alternative 1 impacts.

The Colstrip tracts would increase TSP concentrations 5 $\mu g/m^3$ above Alternative 1 levels to 26 $\mu g/m^3$ vicinity of these mines. The interaction of the Colstrip tracts with nearby existing mines (i.e., Big Sky) is negligible.

Ashland (Coalwood) and Northwest Otter Creek would add 5 $\mu g/m^3$ near the mine boundaries to the 16 $\mu g/m^3$ background level 1 $\mu g/m^3$ about 1 mile from the mines. The interaction of these mines with existing Coal Creek Mine is negligible.

Spring Creek, North and West Decker mines would add 5 $\mu g/m^3$ to the Alternative 1 TSP levels. This would result in ambient concentrations of 26 $\mu g/m^3$ around the East, North, and West Decker mines.

Spring Draw would increase TSP concentrations 1 $\mu g/m^3$ within 1 to 2 miles of the mine. This would act to increase the area of 5 and 20 $\mu g/m^3$ total TSP concentrations over what was predicted in Alternative 1. Concentrations near the mine boundaries at Timber Creek and Duck Nest Creek would increase by 5 $\mu g/m^3$. Increases of 1 $\mu g/m^3$ would occur within 2 to 3 miles of these mines. These mines will act to increase the size of the concentration isopleths. Duck Nest Creek would interact with Belle Ayr to increase concentrations by 10 $\mu g/m^3$. Total TSP level would be about 84,700 tons per year.

The increase in nitrogen dioxide concentrations is predicted to be less than 5 $\mu g/m^3$ within the region in 1990 and 1995, resulting in ambient levels of 21 $\mu g/m^3$.

Sulfur dioxide levels are not predicted to increase more than 1 $\mu g/m^3$ above the background level of 1 $\mu g/m^3$ throughout the region in 1990 and 1995.

Alternative 3

The impacts of Alternative 3 are the same as for Alternative 2 except in the area of Spring Draw, Kintz Creek, and Keeline. Spring Draw is not included in this alternative. Kintz Creek and Keeline are predicted to add less than 5 $\mu g/m^3$ of TSP in their vicinity in 1990 and 1995. These two tracts would interact with existing mines to produce ambient concentrations of less than 26 $\mu g/m^3$. Total TSP level would be about 86,100 tons per year.

The increase in nitrogen dioxide concentrations is predicted to be less than 5 $\mu g/m^3$ within the region in 1990 and 1995 resulting in ambient levels of 21 $\mu g/m^3$.

Sulfur dioxide levels are not predicted to increase more than 1 $\mu g/m^3$ above the background level of 1 $\mu g/m^3$ throughout the region in 1990 and 1995.

Alternative 4

The impacts of the maintenance tracts in Alternative 4 are identical to those of Alternatives 2 and 3. The impact of Duck Nest Creek is identical to its impact in Alternatives 2 and 3. The impacts of Spring Draw, Kintz Creek and Keeline are identical to those of Alternatives 2 and 3.

Ashland (Decker-Birney), Ashland (Coalwood), Northwest Otter Creek, and Southwest Otter Creek all produce impacts of less than 10 $\mu g/m^3$ near the mines and 1 $\mu g/m^3$1 mile from the mines. Their interaction results in ambient concentrations of 26 $\mu g/m^3$ between the two Ashland mines and an area of 17 $\mu g/m^3$ concentrations stretching 15 miles along the north-south axis of Ashland (Coalwood) and Southwest Otter Creek and 9 miles along the east-west axis of Ashland (Decker-Birney) and Northwest Otter Creek. In this alternative, Rocky Butte and Timber Creek interact with Caballo to produce maximum ambient concentrations of approximately 46 $\mu g/m^3$. This is 77 percent of the Wyoming standard and the federal secondary standard. Total TSP level would be about 94,900 tons per year.

The increase in nitrogen dioxide concentration is predicted to be less than 5 $\mu g/m^3$ within the region in 1990 and 1995 resulting in ambient levels of 21 $\mu g/m^3$.

SO_2 levels are not predicted to increase more than 1 $\mu g/m^3$ for an ambient concentration of 2 $\mu g/m^3$ throughout the region in 1990 and 1995.

Short-term (24-hour) modeling was performed for two groups of sources near the town of Gillette. One group consisted of the town of Gillette; the Neil Simpson and Wyodak power plants; and Wyodak, East Gillette, Dry Fork, South Rawhide, Buckskin, and Eagle Butte surface coal mines; and Spring Draw tract. The other group consisted of the Rocky Butte, Timber Creek, Duck Nest Creek tracts; and Caballo, Belle Ayr, Pronghorn, Caballos Rojo, and Cordero surface coal mines. Emissions from 1995 were modeled to determine maximum 24-hour TSP concentrations since emissions for 1990 would be less. Therefore, air quality impacts predicted for 1995 are a conservative estimate of maximum expected short-term concentrations.

Emissions from the mines and power plants north and east of Gillette produced several areas with ambient concentrations greater than 36 $\mu g/m^3$. The ambient concentrations exceed 116 $\mu g/m^3$ in several areas. Violations of the Wyoming 24-hour standard may occur north of Spring Draw, Buckskin, Rawhide, and Wyodak.

In the area southeast of Gillette, the mines interact to form several areas with concentrations exceeding 36 $\mu g/m^3$ the largest of which extends for about 11 miles north-south. Ambient concentrations greater than 116 $\mu g/m^3$ occur at several locations. Ambient concentrations in the following areas may exceed the 24-hour TSP standard in Wyoming: northeast of Rocky Butte, Belle Ayr and Duck Nest Creek, and southeast of Caballos Rojo.

The visibility impacts of the existing sources and the proposed mines would not be significant. Reduction of visual range in 1995 east of the Northern Cheyenne Indian Reservation would be about 3 percent and a decrease in apparent contrast 0.047. North of Gillette reduction of visual range would be about 7 percent for 1995 and decrease in apparent contrast 0.021. (The inherent contrast of the viewed object is assumed to equal −0.7, a typical value for a tree covered hill). Therefore, on a regional basis, the proposed alternatives would cause a minimal visibility impact. Visibility degradation may occur downwind of the largest proposed mines when meteorological conditions cause poor dispersion.

The Technical Report (Radian, 1981) contains a more detailed discussion of the above results.

UNAVOIDABLE ADVERSE IMPACTS

The coal cannot be produced by surface mining without generating fugitive dust. The impacts of individual mines decrease rapidly beyond the mine boundary. Annual ambient TSP levels would increase by 1 $\mu g/m^3$ over sizeable portions of the region. Localized violations of the short-term standards could occur if unfavorable meteorological conditions persist for several hours at a time.

SHORT TERM VS. LONG TERM

Anticipated air quality impacts would constitute a short-term use of the air resource. Insofar as the impacts may cause or contribute to violations of the federal and state ambient air quality standards (e.g., in the immediate vicinity of some existing and proposed mine clusters), or consume a portion of the PSD increment, there would be a potential restriction on the nearby development of other industrial activities that emit air pollutants. Near the mines, this impact would cease when mining activities are completed and the areas are reclaimed. Air pollutant emissions that result from the portion of the induced population that chooses to remain in the area after mining is completed may continue to consume a minor portion of the PSD increments, and thus may result in a small, localized long-term impediment to industrial siting opportunities.

IRREVERSIBLE/IRRETRIEVABLE

On a regional basis, the proposed leasing actions would irreversibly commit a relatively small portion of the air resource. Upon completion of the mining activities, reclamation of the leased properties and relocation of the population increments that result directly and indirectly from the mining activities, it would be possible to retrieve the air resource commitment and return air quality to the current conditions.

SOILS, VEGETATION, AND RECLAMATION

The difference in impacts to soils and vegetation between alternatives primarily is a function of the amount of soil disturbed. Table 4-3 shows the total acres disturbed through end of mine life. The impacts of these alternatives on the soils would be the alteration of existing soil characteristics and properties. These alterations would affect permeability, infiltration rates, soil/air and soil/water relationships, bulk density, nutrient level, micro-organism composition, and productivity, all of which have developed over a period of time.

All of the regional development activities would result in accelerated erosion by wind and water due to exposure and increased activity, until the soil is revegetated. The increased erosion would result from the disturbed soils not having any protective cover and inability of the soil to soak up water. Future population increase in the region would impact soils by a permanent loss of soil surface which results from the construction of housing and support facilities.

Reclaimed soils would not redevelop structural characteristics comparable to the original soil for decades (in the case of less developed soils) to many centuries (for the more developed soils) or not at all for Aridisols, which probably formed under a different climate. Though these lands would be reclaimed, in some cases they would require more intensive and costly management to be revegetated and stabilized. The success of reclamation and revegetation would depend on the nature of the mine site and the specifics of the mine and reclamation plan. Reclamation success for vegetation has been shown to be good so the impact of vegetation loss would not be long term (BLM, 1981; Packer, 1974).

UNAVOIDABLE ADVERSE IMPACTS

The residual impacts on soils would be the alteration of existing soil characteristics and properties. These alterations would affect permeability, infiltration rates, soil/air and soil/water relationships, bulk density, nutrient level, micro-organism composition, and productivity. Vegetation would be lost until reclamation and revegetation is completed.

SHORT TERM VS. LONG TERM

Return of a significant part of the disturbed land to a productive state during the life of the mine is anticipated. Several years after initial revegetation, vegetative productivity could vary from 50 to 100 percent of the premining level, which exhibits wide variation due to different soils and terrain.

IRREVERSIBLE/IRRETRIEVABLE

Soil loss resulting from disturbance would be considered irretrievable. The disturbance of natural soil profiles and the different associated vegetation types is irreversible.

WILDLIFE

Losses (death and relocation) to mule deer could be as high as 450 (net loss by end of mining equalling 4 percent of total hunt area population). Major causes for these losses would be habitat loss, and a combination of poaching, road kills, and urban development. Location of mines, access roads, and railroad spurs would disrupt local daily and seasonal movements in the Otter Creek area. Drastic topography changes in hunt areas 17 and 18 would occur due to the Thunderbird, Wildcat and Horse Creek developments. Extensive areas of ponderosa pine or juniper cover would be mined and removed for use as important thermal and escape cover.

Antelope losses (death and relocation) within the region could be as much as 2,460 animals (net loss by end of mining). These losses would occur due to habitat loss, location of railroad and access roads, and increased traffic. Up to 460 animals could be lost in the Decker and Otter Creek areas alone during a severe winter due to loss of critical habitat (USGS, 1979; Martin, 1980). The Spring Creek and North Decker Mines would remove several hundred acres of critical habitat used by about 375 antelope during the severe winters of 77-78 and 78-79. This, in turn, would cause overcrowding on nearby important winter ranges. The animals would be more vulnerable to death from disease and starvation during severely cold weather and heavy snow. Losses to antelope in hunt areas 24 and 101 would be about 560 animals (8 percent of hunt area population). Animal access to hunt areas 24 and 101 would be severely restricted because of the railroad between Gillette and Orin Junction. Seasonal or daily movements would be further restricted by active mining operations and county roads crossing the railroad which would reduce the hunt areas into smaller pastures. Duck Nest Creek tract would create the greatest restriction to movement. Range overuse, possible lack of water sources, increased road kills, and crop depredation would all result from the development of this tract. The mine pit, haul roads, and stream channel diversion would cause the north-south movement corridor between the Belle Ayr Mine and Highway 59 to be about 1 mile wide at the western edge of the pit. Additional restriction of movement in the northern portion of hunt area 24 would occur with the development of Timber Creek and Rocky Butte tracts together. Development of Kintz Creek and Keeline tracts would disrupt seasonal use in the southern portion of hunt area 24. Losses to antelope in hunt area 17 would be about 400 animals (4 percent of hunt area population). The railroad spur to Wildcat, Wildcat Creek, and Horse Creek developments would create a movement barrier to antelope in hunt area 17. Movement to favored wintering areas would further be hindered by increased traffic on Highway 14-16 and the presence of new subdivisions on the west side of the highway. Development of the Spring Draw tract in hunt area 17 would take place in an area used for staging (where animals congregate prior to movement) prior to fall migration. As mining would progress into the western third of the Spring Draw tract severe restriction of seasonal movement would occur. Contributing factors to the impact on this tract would be the presence of housing subdivisions to the west and northwest, and the Buckskin Mine access road to the south. Fall antelope movement north of Rocky Butte tract would be further hindered by new housing subdivisions.

About 13 sharp-tailed grouse leks could be affected. Four sharp-tailed grouse leks would be destroyed in the Colstrip area and nine in the Otter Creek area. Long-term population decline should not occur in the Colstrip area. As long as sufficient nesting habitat remains near the disturbed lek, the population would probably shift to undisturbed areas. If exceptions are granted on two leks overlying federal minerals in the Otter Creek area, 58 percent of the Otter Creek area population would be affected. One sage grouse lek would be destroyed in the Decker area. Within hunt area boundaries 24 and 101 two sage grouse leks would be destroyed and nesting territories for these game birds would be reduced by 20 to 50 percent.

Approximately 13 percent of the Campbell County population of golden eagles would move to new nesting locations because their nesting sites would be mined. Successful mitigation would involve establishing artificial nests or platforms within a territory being disturbed.

Table 4-4 shows wildlife habitat acreage that would be disturbed under each alternative.

No adverse impacts to threatened or endangered species are anticipated in Wyoming or Montana coal lease areas. Section seven consultation has been completed for the Montana tracts and should be completed on the Wyoming tracts by December, 1981.

UNAVOIDABLE ADVERSE IMPACTS

The short-term loss of wildlife habitat as depicted in Table 4-4 would be unavoidable. Wildlife population losses due to poaching and road kills would be unavoidable.

SHORT TERM VS. LONG TERM

On the short-term, antelope populations could be reduced by as much as 2,000 animals in Wyoming hunt areas 24 and 101 and 17; reduction in the Decker and Otter Creek areas of Montana could be up to 460 antelope. About 13 pairs of golden eagles would be manipulated into nesting away from active mining areas. Sufficient hunting habitat for these birds would exist after mining, which would allow them to reoccupy the nests they presently use. Sharp-tailed grouse population in the Colstrip and Otter Creek areas would be reduced from 15 to 48 percent during the short term due to the loss of 13 leks and adjacent nesting territories.

In the long term, antelope population would remain depressed 10 to 30 years after mining due to the long establishment time for sagebrush to invade reclaimed areas. Also, sharp-tailed grouse population would remain depressed from 10 to 20 years after mining until sufficient escape cover has regrown in reclaimed areas.

IRREVERSIBLE/IRRETRIEVABLE

Animals lost during the development of new coal mines in the region would be irretrievably lost. Loss of topographic diversity (rough topography reclaimed to gentle slopes) would support fewer deer population.

CULTURAL RESOURCES

All cultural sites will be identified on the lease tracts prior to mining. The Keeper of the National Register of Historic Places will determine significance. Any site identified as potentially eligible for listing on the National Register would be protected (National Historic Preservation Act, Section 106). The site density figures are based on the existing documented data base made up of numerous sources. However, the data base in some cases is incomplete.

Cultural resources would be committed to either destruction or data retrieval. Table 4-5 shows estimated cultural sites that could be affected by 1990. A systematic collection and analysis of information would add to the scientific knowledge of the area; however, some knowledge would be lost due to excavation of sites before improved technology is available. Also, unauthorized collection of artifacts due to population increases would result in the reduction of the integrity of the resource. Buried sites would be lost.

UNAVOIDABLE ADVERSE IMPACTS

All sites would be disturbed with mining. Some knowledge would be lost due to excavation of sites before improved technology.

SHORT TERM VS. LONG TERM

A cultural inventory for unstudied areas of the region would be performed at an earlier date with coal development taking place.

IRREVERSIBLE/IRRETRIEVABLE

Cultural resources would be disturbed. Data retrieval would not be available for future researchers. Buried cultural sites would be lost.

VISUAL RESOURCES

Coal mining would have the greatest impact on the scenic quality of the landscape than any of the other energy related activities within the region. The extraction of the coal by strip-mining changes form, line, color, and texture of the landscape. Silos, conveyors, and facility structures change line and color; access roads, railroad spurs, and power lines change line and texture.

These changes would result in a reduction of scenic quality and a change in management class. The area impacted is largely scenic quality C with some B, and VRM Class III or IV (see Appendix D). Within the region the most sensitive locations to this reduction in scenic quality would be along high-use roadways, recreation areas, and near population centers. Mines located in these areas could also provide a resource for interpretive and educational programs.

UNAVOIDABLE ADVERSE IMPACTS

Decreasing VRM Class III and IV areas to Class V through the end of mine life would be unavoidable.

SHORT TERM VS. LONG TERM

Visual contrast impacts created by access roads, railroad spurs, power lines, and facility structures would change VRM Class III and IVs to Class V on the short term.

IRREVERSIBLE/IRRETRIEVABLE

None identified.

LAND USE

Table 4-3 shows acres disturbed by mining for each alternative. Access roads, railroad spurs, and urban growth would remove an additional 11,400 acres under Alternative 1, 800 acres each for Alternatives 2 and 3, and 930 acres under Alternative 4. Underground utilities, pipelines, and overhead power lines would modify agricultural use but would not remove a significant amount of acreage from production.

Impacts to the 44 individual farm and ranch operations would be offset by compensation and royalties to the landowner (see Appendix G).

Loss in crop production would depend upon acres of each crop planted but the acreage itself represents county decreases of .2 percent in Big Horn, .5 percent in Powder River, 1 percent in Rosebud, and 2 percent in Campbell under Alternative 2. Decreases that would occur under Alternative 3 are identical except for Powder River County, which would be 1 percent. Under Alternative 4 decreases would be .2 percent in Big Horn, 1 percent Powder River, 2 percent in Rosebud, and 4 percent in Campbell.

The loss in agricultural land use would represent a loss of 7,063 AUMs of grazing under Alternative 2; 7,558 under Alternative 3; and 11,476 under Alternative 4.

Other impacts upon land use would occur by relocation of railroad lines and county roads.

UNAVOIDABLE ADVERSE IMPACTS

Conversion of existing rural land uses to mine-related and urban uses would be unavoidable. Loss of AUMs described above is also unavoidable.

SHORT TERM vs. LONG TERM

In the short term there would be a loss of agricultural productivity on tracts and in pipeline, powerline and utility rights-of-way until reclamation is completed. There would be a long-term loss of agricultural land use to urban growth.

IRREVERSIBLE/IRRETRIEVABLE

Lands used for urban expansion, access roads, and railroads would be irretrievable.

RECREATION

The present number of facilities would fall short by 1990. The regional population would increase from 180,000 to 239,000 (approximately 30 percent by 1990 for Alternative 1) and 434,000 (approximately 140 percent for Alternative 4). A corresponding increase in all recreational activities would occur. The greatest increases would be fishing in Montana and winter activities in Wyoming (Montana Game and Fish, 1978; Wyoming Recreation Commission, 1980). Hunting pressures would increase in Montana from 64,900 participation days to between 70,700 days for Alternative 1 (No-Action) and 77,000 days Alternative 4 (maximum leasing). In Wyoming the increase would be from 269,625 participation days to between 380,800 for Alternative 1 and 414,700 for Alternative 4.

While not quantifiable the impacts on recreation would be degradation of sites and areas from increased use and vandalism, and increases in operating and maintenance costs to federal, state, and local governments plus the private sector.

UNAVOIDABLE ADVERSE IMPACTS

Population increases from additional coal leasing would place high demand and use on existing facilities which have not increased in supply. Loss of public lands would decrease the areas available for recreation.

SHORT TERM VS. LONG TERM

The short-term effect would be increased use on a resource that is in short supply. The long-term effect would be a decrease in demand when the population levels off or decreases making recreation facility supply adequate.

IRREVERSIBLE/IRRETRIEVABLE

Access to public lands will be irreversibly lost. The aesthetic recreation experience would be irretrievably lost because of the increased number of users on existing recreation areas.

TRANSPORTATION

Railroads

Appendix F (Figure F-3) shows the estimated TPD for each alternative. These impacts are based on peak production and are shown on Table 4-6. The increased number of trains would have the most impact on communities along the main lines. In these communities, interruptions for at-grade crossings would increase the affect on traffic flow, emergency vehicles, yard operations, and noise levels within the communities (see Noise Section). The probability of car/train accidents would also increase as shown in Table 4-6.

Increased traffic along main lines would result in the need for upgrading switches and traffic control systems, additional sidings, and increased maintenance and repair. The capacity of these lines could be increased to keep up with mining production (personal communication, Peter Briggs, BN, 1981). New railroad spurs would be added to provide access to new mine facilities. These new railroad spurs would remove additional acres from agricultural production (see Land Use section).

Highways

Increased traffic is the major impact on road and highway systems. Both the number and type of vehicles impact roads directly. Increases in the traffic along primary and secondary roads would require the need for widening and safety improvements to expand road capacity. Increase in traffic, especially heavy trucks and equipment, would cause maintenance problems such as surface deterioration, ruts, potholes, snow and trash removal, bridge replacement, and signing. Additional increases in traffic would result from increased population. This growth is not estimated to exceed 2 percent annually (personal communication, Phil Colbert, Montana State Department of Highways, 1981). The roads connecting population centers and mines would be most affected. These would be Highway 59, Highway 387, Highway 14/16, Interstate 90 and Highway 87 in Wyoming; Highway 212, FAS 566, FAS 314, FAP 92, Interstate 90, and FAP 39 in Montana.

Increased traffic and road deterioration would cause increased accident rates. Because statistical projections are not available for specific routes, impacts are not quantified.

UNAVOIDABLE ADVERSE IMPACTS

Increases in railroad and auto traffic, delays for auto traffic at grade crossings, accident rates, and road maintenance would be unavoidable.

SHORT TERM VS. LONG TERM

None are identified.

IRREVERSIBLE/IRRETRIEVABLE

Any loss of life or property in car/train accidents.

NOISE

The noise-related impacts within the 55 dBA zone for railroads and highways would be interference of sleep and work tasks, disruption of concentration, general annoyance, and disruption of wildlife and domestic animal activities. These impacts would be most significant in areas along new railroad lines and in small communities which do not presently experience large amounts of highway traffic. These areas would include these along the proposed Tongue River Railroad and the Towns of Broadus, Ashland, and Birney, Montana. For railroads the distance included in this zone has been calculated based on traffic projections. These distances are given in Table 4-7 are number of feet from track center line to the 55 dBA contour. Because actual ADT projections have not been calculated for highway traffic, specific estimates of zones would not be made. The 55 dBA zones for most routes; however, would fall between 500 and 1,000 feet from the road center line.

SOCIOLOGY

Social Organization

Social organization in Ashland and Broadus would change considerably with new federal coal development. Newcomers would be different from long-time residents in terms of occupations, values, and interests (Massey, 1977). Influx of newcomers would be at a rapid rate (see Table 4-11). This rapid population growth would disturb the stability of these two communities by changing their structure and functioning. Because of these two factors, the current informal system would not be able to absorb these newcomers. Thus, newcomers would establish their own independent social networks. Interpersonal relationships would become more formal. Long-time residents may feel a loss of their "sense of community." Also, in Ashland there would be the potential for conflicts between the newcomers and the Native Americans. It is likely the Native Americans would feel their lifestyle and community (both in Ashland and on the reservation) as threatened by newcomers.

Rapid population growth in the Ashland area and the Broadus area would result in visible stresses such as personal property crime, family instability, (divorce, spouse abuse, child abuse and neglict), alcohol and drug abuse, interpersonal conflict, and similar behaviors.

While it is uncertain as to whether the rate would markedly change, the increased population levels would virtually insure that their actual incidents would increase. These stresses of adaptation, affecting both long-time residents and newcomers, would be most evident and intense during the initial construction phase of the mine development under Alternative 4. However, at least until construction is completed and stability is re-established, they would also exist in the Ashland and Broadus areas under Alternative 2 and 3 development.

The social organization in Gillette would continue apace toward formal interpersonal relationships. Population increases would add to the process of urbanization and suburbanization.

Community Services

The community services and facilities that would be required by 1990 are given in Table 4-8.

Housing

Table 4-9 gives the projected number of dwelling units that would be required in 1990 under each alternative.

There is planning underway for housing in the Ashland district. A subdivision has received approval for construction of 46 dwellings and an additional 96 lots (personal communication, Eldon Price, Rosebud County Planner, 1981). Also, planning for two subdivisions near Ashland, located in Powder River County, would provide for an addition of approximately 180 dwellings. The update of the Powder River County Comprehensive Plan of 1979 discusses plans for expansion within the town of Broadus including residential areas (Powder River County Director, 1981). Since Gillette has been growing at a rapid rate, housing construction is expanding concurrently.

ECONOMICS

Table 4-12 presents a comparison of potential fiscal impacts among the alternatives. The exact magnitude of projected deficits or surpluses should not be overemphasized. The importance of magnitudes derives only from their ability to provide a comparison of the relative impacts and to point out the localities where potential costs may exceed potential benefits, or vice versa, where potential benefits may exceed potential costs. Assumptions and methodology are implicit in the footnotes to the table.

Montana

Montana counties, schools or communities do not receive a percentage of the severance tax on mineral production from the state. However, in an effort to tie potential benefits to potential costs in the analysis of Alternatives 2, 3, and 4, additional revenues to local entities were estimated on the basis of coal production.

Big Horn County

Alternative 1 (No Action). Coal production will stimulate growth in Big Horn County even without additional federal competitive leasing. A production increase of 100 percent by 1986 would cause an equal increase in coal mining employment and a moderate increase in employment by other sectors by 1990 (Table 4-10). Population increases (Table 4-11) would result in increases in public expenditures through 1990 (Table 4-12) after which the changes would stabilize.

Alternatives 2, 3 and 4. Were it not for the slight increase in employment caused by the maintenance tract, North Decker, Big Horn County would not be affected economically by Alternatives 2, 3, or 4. Because North Decker is a component of each of Alternatives 2, 3, and 4, the economic impacts to Big Horn County would be the same under each. However, in the final analysis, a relatively insignificant increase in coal employment would not result in a notable increase in public expenditures until 1990, at which time public revenues derived from the tract would equal or slightly exceed the expenditures (Table 4-12).

Powder River County

Alternative 1 (No Action). Without additional federal competitive leasing the economy of Powder River County is expected to remain static (Table 4-12).

Alternatives 2, 3, and 4. All tracts that are expected to provide stimulus to employment, except North Decker, are located in Powder River County. However, due to the close proximity of Ashland, in adjacent Rosebud County, 60 percent of any resulting population increase is expected to reside in Rosebud County.

Even though Powder River County is expected to receive less than half of any population increase, the resulting economic impact would be significant due to the small number of residents in the county. Increases in expected public expenditures during the early phase of construction (1986) would outweigh any possible increase in revenues to the county, at that time, causing a negative fiscal impact under each of Alternatives 2, 3, and 4 (Table 4-12). By 1990, however, fiscal surpluses would occur for county schools and the community of Broadus. Powder River County would experience a fiscal surplus under Subalternatives 2B and 2C or 3B and 3C.

Rosebud County

Alternative 1 (No Action). Ongoing coal development, a new power plant, and an increase in oil and gas activity would put pressure on county, community, and school resources in Rosebud County without additional federal leasing. The heaviest impacts would be realized by 1986 as public expenditures increase by about 30 percent to provide necessary services to an increasing population.

Alternatives 2, 3, and 4. Because Rosebud County, Ashland in particular, would provide residence to 60 percent of the population increase associated with any of the action alternatives, but would not be the recipient of public revenues from the coal production, a negative net fiscal balance would result under Alternatives 2, 3, or 4 (Table 4-12). This would put added pressure on public finances as it would be occurring during a period when public expenditures are expanding due to other developments.

Ashland: It is expected that all of the additional population to Rosebud County, due to Alternatives 2, 3, or 4, would reside in Ashland District (pop. 569 in 1980). This would severely impact the community (see Table 4-11). Alternative 2 or 3 would increase Ashland District population by about 1,700 in 1990, in the worst case.

Agricultural Economics: Appendix G (Tables G-1 and G-2) presents an analysis of the relative impacts to agriculture in the Montana section of the region.

Wyoming

Alternative 1 (No Action). Increased coal production, oil and gas development, new power plants, synthetic fuel plants, and uranium development would all be contributing factors to what is expected to be a period of rapid growth for several counties of the Wyoming region even without additional federal coal leasing. In Campbell County the major force behind an 80 percent increase in population by 1985 (Table 4-11) would be a fivefold increase in coal production, as well as a new power plant. In Converse County a tripling of coal production and the construction of a synfuels plant would contribute to an approximate 50 percent increase in population by 1985. Increased coal production in Sheridan County is expected to be accompanied by moderate growth. Other counties would undergo steady, but less spectacular, growth as they provide services or residences for commuters to the counties of high growth. Population increases in Natrona County and the city of Casper would continue apace as Casper continues to be a trade center providing wholesale and retail outlets and services to the region.

Alternatives 2, 3, and 4. In terms of the economic impacts which would result to Wyoming counties from Alternatives 2, 3, and 4 there are only two alternatives. This occurs because the effects of Alternatives 2 and 3 are the same, leaving a comparison between either of these alternatives and Alternative 4. Predictably, the impacts of Alternative 4 would be the heaviest.

Also predictable is the impact to Campbell County under any of the alternatives. Because all tracts under consideration in the Wyoming section of the region are located in Campbell County, the largest share of employment and population increases would occur in Campbell County (Tables 4-10, 4-11). Any employment or population increases to other counties, under the action alternatives, would be due to creation of secondary employment in the retail, wholesale, and services sectors or as a result of persons employed in Campbell County, but residing in another county.

Population impacts notwithstanding, Campbell County would realize a significant net fiscal surplus as the public revenues associated with Alternatives 2, 3, or 4 exceed the expected public expenditures (Table 4-12). This is true for the school district also. However, after the higher levels of sales and use tax associated with the construction period disappear, incremental expenditures by the city of Gillette resulting under these alternatives would exceed expected revenues by about 2.5 percent of the projected 1990 no-action expenditures under Alternative 2 or 3 or by about 5 percent under Alternative 4.

As the public revenues associated with the new coal production accrue to Campbell County and none to neighboring counties, the incremental net fiscal balance in other counties would be negative as public expenditures expand to serve increased populations. The largest, negative, incremental balances would occur in Natrona County and Casper at about .5 million dollars under Alternatives 2 or 3, or about 1 million dollars under Alternative 4 in 1990. The 1 million dollar level would equal about 3 percent of projected 1990 Natrona school district expenditures.

Agricultural Economics: See Section 3 "Socioeconomics" in the Tract Profiles (BLM, 1981) on the individual tracts for a discussion about the effects of coal production on Wyoming agriculture.

UNAVOIDABLE ADVERSE IMPACTS

The following unavoidable adverse impacts are presented by alternative for the purpose of comparison. Alternative 1 impacts have been added to each of the other alternatives.

ALTERNATIVE 1

1) Removal of the coal beds and destruction of overlying strata.

2) Removal of approximately 210,000 acres of aquifers.

3) Destruction of 252 wells and 25 springs.

4) DS concentrations would increase in reclaimed areas possibly two to three times the mining levels.

5) Total TSP levels would be about 69,300 tons per year.

6) Alteration of soil characteristics and properties, and loss of vegetative cover on approximately 210,000 acres.

7) Wildlife population losses due to poaching and road kills.

8) Between 1,311 and 3,733 cultural sites would be disturbed. Some knowledge would be lost due to excavation of sites before improved technology.

9) Decrease of VRM Class III and IV areas to Class V.

10) Loss of 11,400 acres for conversion of existing rural land uses to mine-related and urban uses.

11) High demand would be placed on existing recreation facilities.

12) Increases in railroad and highway traffic.

13) Increased delays for auto traffic at grade crossings.

14) Increases in road maintenance.

15) Increases in accident rates.

ALTERNATIVE 2

1) Removal of the coal beds and destruction of overlying strata.

2) Removal of approximately 245,000 acres of aquifers.

3) Destruction of 299 wells and 33 springs.

4) DS concentrations would increase in reclaimed areas possibly two to three times the mining levels.

5) Total TSP levels would be about 84,700 tons per year.

6) Alteration of soil characteristics and properties, and loss of vegetative cover on approximately 267,400 acres (Alternative 1 plus Alternative 2 acreage from Table 4-3).

7) Wildlife population losses due to poaching and road kills.

8) Between 1,882 and 4,304 cultural sites would be disturbed. Some knowledge would be lost due to excavation of sites before improved technology.

9) Decrease of VRM Class III and IV areas to Class V.

10) Loss of 1,200 acres for conversion of existing rural land uses to mine-related and urban uses.

11) High demand would be placed on existing recreation facilities.

12) Increases in railroad and highway traffic.

13) Increased delays for auto traffic at grade crossings.

14) Increases in road maintenance.

15) Increases in accident rates.

ALTERNATIVE 3

1) Removal of the coal beds and destruction of overlying strata.

2) Removal of approximately 247,000 acres of aquifers.

3) Destruction of 310 wells and 35 springs.

4) DS concentrations would increase in reclaimed areas possibly two to three times the mining levels.

5) Total TSP levels would be about 86,100 tons per year.

6) Alteration of soil characteristics and properties, and loss of vegetative cover on approximately 274,000 acres (Alternative 1 plus Alternative 3 acreage from Table 4-3).

7) Wildlife population losses due to poaching and road kills.

8) Between 1,855 and 4,277 cultural sites would be disturbed. Some knowledge would be lost due to excavation of sites before improved technology.

9) Decrease of VRM Class III and IV areas to Class V.

10) Loss of 12,200 acres for conversion of existing rural land uses to mine-related and urban uses.

11) High demand would be placed on existing recreation facilities.

12) Increases in railroad and highway traffic.

13) Increased delays for auto traffic at grade crossings.

14) Increases in road maintenance.

15) Increases in accident rates.

ALTERNATIVE 4

1) Removal of the coal beds and destruction of overlying strata.

2) Removal of approximately 270,000 acres of aquifers.

3) Destruction of 352 wells and 35 springs.

4) DS concentration would increase in reclaimed areas possibly two to three times the mining levels.

5) Total TSP levels would be about 94,900 tons per year.

6) Alteration of soil characteristics and properties, and loss of vegetative cover on approximately 293,500 acres (Alternative 1 plus Alternative 4 acreage from Table 4-3).

7) Wildlife population losses due to poaching and road kills.

8) Between 2,148 and 4,570 cultural sites would be distubed. Some knowledge would be lost due to excavation of sites before improved technology.

9) Decrease of VRM Class III and IV areas to Class V.

10) Loss of 12,330 acres for conversion of existing rural land uses to mine-related and urban uses.

11) High demand would be placed on existing recreation facilities.

12) Increases in railroad and highway traffic.

13) Increased delays for auto traffic at grade crossings.

14) Increases in road maintenance.
15) Increases in accident rates.

SHORT TERM VS. LONG TERM

The following lists of relationships between short-term uses of man's environment and the maintenance and enhancement of long-term productivity have also been presented by alternative.

ALTERNATIVE 1

1) Short-term impact of an increase in DS concentrations in reclaimed areas.
2) Ground water levels in the vicinity of the mines would be lower during the short term but would return to near premining levels after reclamation.
3) Anticipated air quality impacts would constitute a short-term use of the air resource near the mines which could place a potential restriction on the nearby development of other industrial activities that emit air pollutants.

ALTERNATIVES 2, 3, AND 4

1) Short-term impact of an increase of DS concentrations in reclaimed areas.
2) Ground water levels in the vicinity of the mines would be lower during the short term but would return to near premining levels after reclamation.
3) Anticipated air quality impacts would constitute a short-term use of the air resource near the mines which could place a potential restriction on the nearby development of other industrial activities that emit air pollutants.
4) Return of a significant part of the disturbed land to a productive state during the short term is anticipated.
5) Long-term productivity would be lowered for wildlife until sagebrush is re-established.
6) A cultural inventory of the unstudied areas of the region would be performed at an earlier date.
7) Short-term loss of agricultural productivity on the tracts until reclamation.

IRREVERSIBLE/IRRETRIEVABLE

The following types of irreversible or irretrievable commitments of resources would be the same under each alternative; differences between alternatives would be magnitude.

1) Coal once mined and consumed would be irreversible. Coal not mined due to lack of technology would be economically irretrievable.
2) Removal of aquifers and other strata in the mined areas would alter conditions of ground water occurrence.
2) Removal of perching layers would destroy springs and seeps.
3) Wells would be permanently destroyed.
4) Municipal water consumed by the additional population would be irretrievable.
6) Any soil loss resulting from disturbance would be irretrievable.
7) Disturbance of natural soil profiles and different associated vegetation types is irreversible.
8) Wildlife lost would be irretrievable.
9) Loss of topographic diversity would support fewer deer population.
10) Disturbance to cultural resources would be irreversible. Data retrieval would not be available to future researchers. Buried sites would be lost.
11) Land used for urban expansion and mine-related uses would be irretrievable.
12) The aesthetic recreation experience would be irretrievably lost.
13) Loss of life or property is irretrievable.

TABLE 4-1a
ANNUAL COAL PRODUCTION - 1990 (MILLION TONS)
(Federal, State and Private Coal)

	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Existing Mines	194.43	194.43	194.43	194.43
Proposed Mines	128.9	181.00	181.60	330.50
PRLAs	45.55	45.55	45.55	45.55
Total	368.88	420.98	421.58	470.48

TABLE 4-1b
ANNUAL COAL PRODUCTION - 1990 (MILLION TONS)
(Federal Recoverable Reserves Only)

	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Existing Mines	194.43	194.43	194.43	194.43
Proposed Mines	128.90	166.70	169.20	201.90
PRLAs	45.55	45.55	45.55	45.55
Total	368.88	406.68	409.18	441.88

TABLE 4-2
ESTIMATED MAXIMUM POTENTIAL EFFECTS ON DISCHARGE AND DISSOLVED-SOLIDS CONCENTRATIONS OF STREAMS

	Percent reduction in flow				Percent increase in dissolved-solids concentration			
	Alternative				Alternative			
	#1	#2	#3	#4	#1	#2	#3	#4
Armells Creek	1.8	a/	a/	a/	1.2	4.0	4.0	4.0
Rosebud Creek	1.0	a/	a/	a/	1.8	0.1	0.1	0.1
Tongue River	0.4	0.07	0.07	0.1	0.5	0.4	0.4	0.5
Otter Creek	0.01	1.3	1.3	2.7	0.02	1.2	1.2	2.5
Powder River	0.1	a/	a/	a/	0.3	a/	a/	a/
Little Powder River	2.8	0.2	a/	0.2	4.0	0.2	a/	0.2
Cheyenne River	0.7	a/	0.1	0.1	1.5	a/	0.1	0.1
Belle Fourche River	3.5	0.4	0.6	0.7	5.0	0.4	0.6	0.7
North Platte River	0.7	a/	a/	a/	0.07	a/	a/	a/
Yellowstone River	0.3	0.003	0.003	0.006	0.09	0.03	0.03	0.04

a/ No additional effect.

TABLE 4-3
TOTAL ACRES DISTURBED/VEGETATION TYPES AND LAND USE a/

		RANGELAND			AGRICULTURE			
ALTERNATIVE	TOTAL	SAGE/GRASS	GRASSLAND	PONDEROSA PINE	NON-IRRIGATED	IRRIGATED	RIPARIAN/ WETLAND	MISC. b/
1	210,000 c/							
2	57,400	23,800	16,900	8,100	5,300	900	142	2,258
3	64,200	29,800	17,200	8,100	5,800	900	142	2,258
4	83,500	39,800	21,100	10,100	8,800	1,300	142	2,258

a/ Acres derived from total acres of each tract based on habitat types generated by U.S. Fish and Wildlife Service, WELUT, 1980.

b/ One or more of the following types: closed sage, mixed shrub, ranch yards, roads.

c/ Data breakdown of the total acreage is not available.

TABLE 4-4
CUMULATIVE ACRES OF WILDLIFE HABITAT DISTURBED BY 1990

Location	Alternative 1	Alternative 2	Alternative 3	Alternative 4
MONTANA				
Colstrip Area	3,564	5,088	5,088	5,088
Decker Area	6,890	6,890	6,890	6,890
Otter Creek	0	2,057	2,902	3,862
WYOMING Hunt Areas:				
Antelope 24 & 101 (Deer 21)	61,420	62,894	63,831	64,834
Antelope 17, 18, & 19 (Deer 17 & 18)	95,631	97,066	96,243	97,199
Antelope 23 (Deer 19 & 20)	57,400	57,454	57,544	57,544

TABLE 4-5
ESTIMATED AFFECTED CULTURAL SITES
1990

Alternative 1	1,311 to 3,733
Alternative 2	1,882 to 4,304
Alternative 3	1,855 to 4,277
Alternative 4	2,148 to 4,570

a/ Using known and predicted site density figures.

TABLE 4-6
AVERAGE TRAINS PER DAY AND AT-GRADE CROSSING EFFECTS

		At-Grade Crossings		
Location	Trains Per day	Daily Interruptions 5 mph	20 mph	Car/Train Accidents a/ Per 100 Years
Alternative 1				
Miles City, MT	29	5 hrs 48 min	1 hr 27 min	3
Gillette, WY	20	4 hrs	1 hr	2
Newcastle, WY	79	15 hrs 48 min	3 hrs 57 min	10
Torrington, WY	75	15 hrs	3 hrs 45 min	9
Alternative 2				
Miles City, MT	49	9 hrs 48 min	2 hrs 27 min	6
Gillette, WY	21	4 hrs 12 min	1 hr 3 min	2
Newcastle, WY	99	19 hrs 48 min	4 hrs 57 min	12
Torrington, WY	86	17 hrs 12 min	4 hrs 13 min	11
Alternative 3				
Miles City, MT	49	9 hrs 48 min	2 hrs 27 min	6
Gillette, WY	21	4 hrs 12 min	1 hr 3 min	2
Newcastle, WY	99	19 hrs 48 min	4 hrs 57 min	12
Torrington, WY	94	18 hrs 48 min	4 hrs 42 min	12
Alternative 4				
Miles City, MT	60	12 hrs	3 hrs	7
Gillette, WY	22	4 hrs 24 min	1 hr 6 min	3
Newcastle, WY	100	20 hrs	5 hrs	12
Torrington, WY	102	20 hrs 24 min	5 hrs 6 min	13

a/ Based on 1,000 vehicles daily.

TABLE 4-7
RAILROAD NOISE CONTOUR ZONES
(NUMBER OF FEET FROM TRACT CENTER LINE)

Location	Alternative 1	Alternatives 1 & 2	Alternative 4
Miles City, Montana (Northern Route)	4,640	6,130	7,536
Gillette, Wyoming (Central Route)	3,981	3,981	3,981
Newcastle, Wyoming (Central Route)	8,580	10,000	11,659
Torrington, Wyoming (Southern Route)	8,580	10,000	11,659

TABLE 4-8
COMMUNITY SERVICE AND FACILITY REQUIREMENTS (1990) a/

	Montana								Wyoming							
	Rosebud				Powder River				Campbell				Natrona			
Service/Facility	Alt 1	Alt 2	Alt 3	Alt 4	Alt 1	Alt 2	Alt 3	Alt 4	Alt 1	Alt 2	Alt 3	Alt 4	Alt 1	Alt 2	Alt 3	Alt 4
Law Enforcement (sworn officers)	21	23	23	26	4	6	6	7	109	115	115	120	150	152	152	153
Teachers	210	235	235	260	48	69	69	90	811	850	850	892	1,174	1,189	1,189	1,203
Physicians	4	5	5	5	1	2	2	2	39	41	41	43	116	117	117	119
Dentists	6	7	7	7	1	2	2	2	10	11	11	11	46	46	46	47
Hospital Beds	39	43	43	48	10 b/	15	15	19	60	63	63	66	340	345	345	349

a/ Estimates of Montana requirements are based on existing levels per 1,000 population in 1980. Estimates of Wyoming requirements are based on existing levels per 1,000 population in 1979. Exceptions are noted.

b/ There is no hospital in Powder River County. This need is based on the standard of 4 beds per 1,000 population.

TABLE 4-9
PROJECTED NUMBER OF DWELLING UNITS REQUIRED IN THE POWDER RIVER REGION IN 1990

Montana a/	Alternative 1 Baseline	Alternatives 2 or 3 Increment	Alternatives 2 or 3 Total	Alternative 4 Increment	Alternative 4 Total
Big Horn County	5,200	100	5,300	100	5,300
Hardin	1,800	0	1,800	0	1,800
Powder River County	1,150	500	1,650	1,000	2,150
Broadus	350	280	630	800	1,150
Rosebud County	5,600	750	6,350	1,500	7,100
Ashland District	350	750	1,100	1,500	1,850
Wyoming b/					
Campbell County	17,600	900	18,500	1,800	19,400
Gillette	9,000	460	9,460	900	9,900
Converse County	8,200	75	8,275	150	8,350
Douglas	3,600	35	3,635	70	3,670
Crook County	2,900	30	2,930	60	2,960
Moorcroft	510	10	520	15	525
Johnson County	3,700	40	3,740	80	3,780
Buffalo	2,050	20	2,070	40	2,090
Natrona Country	33,200	420	33,620	810	34,010
Casper	23,500	290	23,790	570	24,070
Sheridan County	14,600	170	14,770	340	14,940
Sheridan	8,800	100	8,900	200	9,000
Weston County	3,500	30	3,530	70	3,570
Newcastle	1,750	15	1,765	30	1,780

a/ Estimates based on 1980 population to housing ratio derived from 1980 final census and housing count.

b/ Estimates based on the 1980 population to housing ratio derived from 1980 preliminary census and housing count.

TABLE 4-10
PROJECTED EMPLOYMENT FOR THE POWDER RIVER REGION IN 1990

Montana a/	Alternative 1 Baseline	Alternatives 2 or 3 Increment	Alternatives 2 or 3 Total	Alternative 4 Increment	Alternative 4 Total
Big Horn County					
Coal Employment	1,900	80	1,980	80	1,980
All Other Employment	5,600	80	5,680	80	5,680
Total	7,500	160	7,660	160	7,660
Powder River County					
Coal Employment	15	690	705	1,380	1,395
All Other Employment	1,230	690	1,920	1,380	2,610
Total	1,245	1,380	2,625	2,760	4,005
Rosebud County					
Coal Employment	1,300	0	1,300	0	1,300
All Other Employment	6,100	0	6,100	0	6,100
Total	7,400	0	7,400	0	7,400
Wyoming b/					
Campbell County					
Coal Employment	9,200	1,010	10,200	2,000	11,200
All Other Employment	14,300	180	14,480	300	14,600
Total	23,500	1,190	24,680	2,300	25,800
Converse County					
Coal Employment	1,700	0	1,700	0	1,700
All Other Employment	7,200	80	7,280	170	7,370
Total	8,900	80	8,980	170	9,070
Crook County					
Coal Employment	0	0	0	0	0
All Other Employment	1,750	20	1,770	30	1,780
Total	1,750	20	1,770	30	1,780
Johnson County					
Coal Employment	0	0	0	0	0
All Other Employment	2,600	30	2,630	60	2,660
Total	2,600	30	2,630	60	2,660
Natrona Country					
Coal Employment	0	0	0	0	0
All Other Employment	43,300	540	43,840	1,100	44,400
Total	43,300	540	43,840	1,100	44,400
Sheridan County					
Coal Employment	1,400	0	1,400	0	1,400
All Other Employment	9,500	130	9,630	250	9,750
Total	10,900	130	11,030	250	11,150
Weston County					
Coal Employment	0	0	0	0	0
All Other Employment	2,900	30	2,930	50	50
Total	2,900	30	2,930	50	2,950

a/ Baseline coal employment estimates for the Montana counties were extrapolated from the Wyoming Powder River Input-Output model based on projected additional coal production. Estimates of additional coal employment under Alternatives 2, 3, and 4 were made by Keith Bennett in Tract Profiles, Miles City District Office (BLM, 1981). All secondary employment for Montana was estimated on the basis of one additional job for each permanent primary job and .5 additional jobs for each temporary primary job.

b/ All Wyoming employment estimates were generated by the Wyoming Powder River Input-Output model developed by John McKean at Colorado State University.

TABLE 4-11
PROJECTED POPULATION IN THE POWDER RIVER REGION IN 1990

	Alternative 1	Alternatives 2 or 3		Alternative 4	
Montana a/	Baseline	Increment	Total	Increment	Total
Big Horn County	14,800	320	15,120	320	15,120
Hardin	4,400	0	4,400	0	4,400
Powder River County	2,523	1,120	3,643	2,200	4,723
Broadus	715	580	1,295	1,660	2,375
Rosebud County	14,700	1,680	16,380	3,400	18,100
Forsyth	3,800	0	3,800	0	3,800
Ashland District	800	1,680	2,480	3,400	4,200
Wyoming b/					
Campbell County	45,100	2,300	47,400	4,500	49,600
Gillette	22,500	1,150	23,650	2,250	24,750
Converse County	21,400	200	21,600	400	21,800
Douglas	9,200	90	9,290	170	9,370
Crook County	6,400	70	6,470	130	6,530
Moorcroft	1,220	15	1,235	30	1,250
Johnson County	8,300	90	8,390	180	8,480
Buffalo	4,700	50	4,750	100	4,800
Natrona Country	84,000	1,050	85,050	2,050	86,050
Casper	59,500	740	60,240	1,450	60,950
Sheridan County	33,600	400	34,000	770	34,370
Sheridan	20,300	240	20,540	470	20,770
Weston County	8,600	80	8,680	160	8,760
Newcastle	4,300	40	4,340	80	4,380

a/ Montana county estimates are based on the 1980 ratio of population to employment for permanent employment and 1.3 population to transient employment. Projections of community populations are based on the 1980 ratio of community to county.

b/ Wyoming county estimates are based on the 1980 ratio of population to employment for permanent employment and the ratio of 1970-1980 population change to the 1970-1980 employment change for transient employment. Projections of community populations are based on the 1980 ratio of community to county.

TABLE 4-12
COUNTY, SCHOOL, AND COMMUNITY BUDGET
LEVELS PROJECTED FOR 1990
(Rounded to the Nearest $100,000, Includes Debt Servicing)

Montana	Alternative 1	Alternatives 2 or 3		Alternative 4	
	Baseline a/ ($1,000)	Increment b/ ($1,000)	Total ($1,000)	Increment b/ ($1,000)	Total ($1,000)
Big Horn County					
Revenues	8,200	200	8,400	200	8,400
Expenditures	8,200	200	8,400	200	8,400
Balance	0	0	0	0	0
Big Horn County Schools					
Revenues	13,300	400	13,700	400	13,700
Expenditures	13,300	300	13,600	300	13,600
Balance	0	100	100	100	100
Hardin					
Revenues	1,000	0	1,000	0	1,000
Expenditures	1,000	0	1,000	0	1,000
Balance	0	0	0	0	0
Powder River County					
Revenues	3,800	1,400	5,200	2,500	6,300
Expenditures	3,800	1,700	5,500	3,400	7,200
Balance	0	-300	-300	-900	-900
Powder River Co. Schools					
Revenues	2,000	4,100	6,100	5,600	7,600
Expenditures	2,000	900	2,900	1,700	3,700
Balance	0	3,200	3,200	3,900	3,900
Broadus					
Revenues	200	200	400	300	500
Expenditures	200	100	300	400	600
Balance	0	100	100	-100	-100
Rosebud County					
Revenues	9,800	0	9,800	0	9,800
Expenditures	9,800	1,100	10,900	2,300	12,100
Balance	0	-1,100	-1,100	-2,300	-2,300
Rosebud County Schools					
Revenues	9,100	0	9,100	0	9,100
Expenditures	9,100	1,000	10,100	2,100	11,200
Balance	0	-1,000	-1,000	-2,100	-2,100
Forsyth					
Revenues	2,000	0	2,000	0	2,000
Expenditures	2,000	0	2,000	0	2,000
Balance	0	0	0	0	0

TABLE 4-12 continued

Montana	Alternative 1	Alternatives 2 or 3		Alternative 4	
	Baseline a/ ($1,000)	Increment b/ ($1,000)	Total ($1,000)	Increment b/ ($1,000)	Total ($1,000)
Ashland c/					
Revenues	---	---	---	---	---
Expenditures	---	---	---	---	---
Balance	---	---	---	---	---
Wyoming					
Campbell County					
Revenues	26,600	5,700	32,300	11,300	37,900
Expenditures	26,000	1,400	28,000	2,700	29,300
Balance	0	4,300	4,300	8,600	8,600
School District #1					
Revenues	69,800	10,300	80,100	20,400	90,200
Expenditures	69,800	3,600	73,400	7,000	76,800
Balance	0	6,700	6,700	13,400	13,400
Gillette					
Revenues	19,800	500	20,300	1,000	20,800
Expenditures	19,800	1,000	20,800	2,000	21,800
Balance	0	-500	-500	-1,000	-1,000
Converse County					
Revenues	13,500	0	13,500	0	13,500
Expenditures	13,500	100	13,600	300	13,800
Balance	0	-100	-100	-300	-300
School District #1					
Revenues	24,800	0	24,800	0	24,800
Expenditures	24,800	200	25,000	500	25,300
Balance	0	-200	-200	-500	-500
Douglas					
Revenues	10,800	0	10,800	0	10,800
Expenditures	10,800	100	10,900	200	11,000
Balance	0	-100	-100	-200	-200
Crook County					
Revenues	4,300	0	4,300	0	4,300
Expenditures	4,300	0	4,300	100	4,400
Balance	0	0	0	-100	-100

TABLE 4-12 continued

Wyoming	Alternative 1 Baseline a/ ($1,000)	Alternatives 2 or 3 Increment b/ ($1,000)	Alternatives 2 or 3 Total ($1,000)	Alternative 4 Increment b/ ($1,000)	Alternative 4 Total ($1,000)
School District #1					
Revenues	5,600	0	5,600	0	5,600
Expenditures	5,600	100	5,700	100	5,700
Balance	0	-100	-100	-100	-100
Moorcroft					
Revenues	500	0	500	0	500
Expenditures	500	0	500	0	500
Balance	0	0	0	0	0
Johnson County					
Revenues	2,600	0	2,600	0	2,600
Expenditures	2,600	0	2,600	100	2,700
Balance	0	0	0	-100	-100
School District #1					
Revenues	7,100	0	7,100	0	7,100
Expenditures	7,100	100	7,200	200	7,300
Balance	0	-100	-100	-200	-200
Buffalo					
Revenues	2,400	0	2,400	0	2,400
Expenditures	2,400	0	2,400	100	2,500
Balance	0	0	0	-100	-100
Natrona County					
Revenues	43,000	0	43,000	0	43,000
Expenditures	43,000	500	43,500	1,100	44,100
Balance	0	-500	-500	-1,100	-1,100
School District #1					
Revenues	37,300	0	37,300	0	37,300
Expenditures	37,300	500	37,800	900	38,200
Balance	0	-500	-500	-900	-900
Casper					
Revenues	50,400	0	50,400	0	50,400
Expenditures	50,400	600	51,000	1,200	51,600
Balance	0	-600	-600	-1,200	-1,200
Sheridan County					
Revenues	20,400	0	20,400	0	20,400
Expenditures	20,400	200	20,600	500	20,900
Balance	0	-200	-200	-500	-500

TABLE 4-12 concluded

	Alternative 1	Alternatives 2 or 3		Alternative 4	
Wyoming	Baseline a/ ($1,000)	Increment b/ ($1,000)	Total ($1,000)	Increment b/ ($1,000)	Total ($1,000)
School District #2					
Revenues	13,700	0	13,700	0	13,700
Expenditures	13,700	200	13,900	300	14,000
Balance	0	-200	-200	-300	-300
Sheridan					
Revenues	9,900	0	9,900	0	9,900
Expenditures	9,900	100	10,000	200	10,100
Balance	0	-100	-100	-200	-200
Weston County					
Revenues	4,700	0	4,700	0	4,700
Expenditures	4,700	0	4,700	100	4,800
Balance	0	0	0	-100	-100
School District #1					
Revenues	4,500	0	4,500	0	4,500
Expenditures	4,500	0	4,500	100	4,600
Balance	0	0	0	-100	-100
Newcastle					
Revenues	2,000	0	2,000	0	2,000
Expenditures	2,000	0	2,000	0	2,000
Balance	0	0	0	0	0

a/ These are the budget levels that are expected to exist without additional Federal Competitive Leasing. Expenditures were projected from actual FY 1979/1980 budgets (including debt servicing) on a per capita basis in order to maintain the per capita spending levels of FY 1979/1980. It is assumed that revenues will equal expenditures through additional taxes user fees, grants, royalties, or debt.

b/ The additional expenditures above baseline expenditures, which are required to maintain FY 1979/1980 per capita spending levels for additional populations, were projected from actual FY 1979/1980 budgets (including debt servicing) on a per capita basis. Additional revenues above baseline revenues for Montana Counties are based on revenue to coal production ratios derived from a baseline run of the coal town model, which was generated by Keith Bennett. Additional revenues for Wyoming Counties were generated by a coal revenue model developed by Thomas F. Stinson at the University of Minnesota.

c/ Because Ashland is an unincorporated community without a formal budget it is difficult to make reliable budget projections.

LIST OF PREPARERS

CHARLES WILKIE

Team Leader

Qualifications: Range Management; Bureau of Land Management, 15 years

Responsibility: Overall Direction and Management

GINA RYAN

Writer/Editor

Qualifications: Bureau of Land Management, 2 years; Bureau of Reclamation, 1 year; Department of Defense, 5 years

Responsibility: Writing, Editing, and Technical Coordination

ROBIN HADLOCK

Clerk-Typist

Qualifications: Bureau of Land Management, 2 years

Responsibility: Word Processing

FRED NOACK

Cartographer

Qualifications: Outdoor Recreation Planning; Bureau of Land Management, 1 year

Responsibility: Cartography and Recreation Resources

MANTON BOTSFORD

Archeologist

Qualifications: Fine Arts; Bureau of Land Management, 4 years

Responsibility: Cultural Resources

GLEN NEBEKER

Environmental Coordinator

Qualifications: Botany; Bureau of Land Management, 1 year

Responsibility: Vegetation and Reclamation

CLARKE MCCLUNG

Soil Conservationist

Qualifications: Range Management; Bureau of Land Management, 1 year

Responsibility: Soils and Reclamation

MIKE MCLELLAN

Wildlife Biologist

Qualifications: Wildlife Management; Bureau of Land Management, 5 ½ years

Responsibility: Wildlife

DARREL SCHWILLING

Landscape Architect

Qualifications: Landscape Architecture; Bureau of Land Management, 1 year

Responsibility: Visual Resources, Land Use, Transportation, Noise

LARRY MARKS

Economist

Qualifications: Economics; Bureau of Land Management, 1 year; Farmers Home Administration, 1 year; Department of Agriculture, 5 years

Responsibility: Economics

LIST OF PREPARERS

PAUL MYERS

Sociologist

Qualifications: Sociology; Bureau of Land Management, 7 years

Responsibility: Sociology

JOHN PINCHOCK

Geologist

Qualifications: Geology; Bureau of Land Management, 1 year; State of Montana, 3 years; Industry 1 year

Responsibility: Geology and Other Minerals

TOM LUKOW

Air Quality Specialist

Qualifications: Chemistry; Atmospheric Sciences; Bureau of Land Management, 4 years

Responsibility: Air Quality

DOUG HOOPER

Sociologist

Qualifications: Sociology; Bureau of Land Management, 2 years

Responsibility: Sociology

BERT THOMSEN

Hydrologist

Qualifications: Hydrology; U.S. Geological Survey, 22 years

Responsibility: Surface Water

BILL LICHTLER

Hydrologist

Qualifications: U.S. Geological Survey, 26 years

Responsibility: Ground Water

REFERENCES

ANDERSON, JANE L., 1980. *Preliminary Report on a Cultural Resource Inventory of the Rawhide Mine, Campbell County, Wyoming*. Longmont, Colorado: Pioneer Archeological Consultants.

BENDER, LLOYD. *Coaltown Model*. Billings, Montana: Montana State University.

BRIGGS, PETER, PUBLIC RELATIONS BN, 1981. Systems maps and ATD information for Burlington Northern in Northeast Wyoming. (Personal communication). Darrel Schwilling, Resource Specialist, Casper District Office.

BROWN, R.W., 1962. *Paleocene Flora of the Rocky Mountains and Great Plains*. USGS Professional Paper 375.

BRYANT, GEHR AND ROLLEFSON, 1980. *Analysis of Methodological Goals, Otter and Hanging Woman Creeks Class III Cultural Resource Inventory*. Eugene, Montana: Professional Analysts.

BUREAU OF LAND MANAGEMENT, 1979a. *Final Environmental Statement, Eastern Powder River Coal*. Washington, D.C.: GPO

BUREAU OF LAND MANAGEMENT, 1979b. *Final Environmental Statement, Federal Coal Management Program*. Washington D.C.: GPO

BUREAU OF LAND MANAGEMENT, 1980a. *Final Environmental Impact Statement, Montana Wilderness Inventory, Miles City and Lewistown Districts*. Montana State Office.

BUREAU OF LAND MANAGEMENT, 1980b. *Wyoming Wilderness Study Areas*. Wyoming State Office

BUREAU OF LAND MANAGEMENT, 1981. *Tract Profiles*. Wyoming State Office/Casper District Office.

BUREAU OF LAND MANAGEMENT, unpublished document by Gerald Clark. *Prehistoric Overview of Miles City District*. Miles City, Montana: BLM in-house Class I inventory.

BUREAU OF LAND MANAGEMENT MANUAL. *VRM Manual 8400*. Casper District Office

CAMPBELL COUNTY RECREATION BOARD, 1974. *Campbell County Recreation Study*. Casper, Wyoming: Gorder/South/Bechtel and Associates, P.C.

CITY OF GILLETTE, DEPARTMENT OF PLANNING AND DEVELOPMENT, 1978. *City of Gillette, Campbell County Comprehensive Planning Program*. Gillette, Wyoming.

COLE, G.A., MATSON R.E., AND PEDERSON, R.T., 1980. *Montana Coal: A Guide to Coal Geology, Resources, and Productions*. Montana Bureau of Mines and Geology, S.P. 83.

DORN, ROBERT D., 1980. *Illustrated Guide to Special Interest Vascular Plants of Wyoming*. U.S. Fish and Wildlife Service and Bureau of Land Management.

FEATHERS, MARY, 1981. Discussed site inventories with Wyoming State Archeologist. (Personal communication). Manton Botsford, Resource Specialist, Casper District Office.

FOX, RICHARD ALLEN, 1978. *Archeology of the Spring Creek Mine Area: Survey and Testing Phases*. Missoula, Montana: University of Montana, Department of Anthropology.

GLASS, G.B., 1976. *Update on the Powder River Coal Basin*. Wyoming Geologic Association Guidebook, Powder River.

GLASS, G.B., 1980. *Guide Book to the Coal Geology of the Powder River Coal Basin,* Wyoming Geological Survey PIC 14.

HARJU, H.J., 1980. *The Wyoming Viewpoint* in *Adequate Reclamation of Mined Lands? Symposium*. Soil Conservation Society of America and WRCC-21. Billings Montana.

KING, N.J., USGS HYDROLOGIST, DENVER, COLORADO, 1981. Water quality conditions of spoil aquifers in the Powder River Region. (Personal communication). Bill Lichtler, Resource Specialist, USGS, Lincoln, Nebraska.

LAUMANN, EDWARD O., 1973. *Bonds of Pluralism: The Form and Substance of Urban Social Networks*. New York City, New York: Wiley

MARTIN, P.R., 1980. *Terrestrial Wildlife Habitat Inventory in Southeastern Montana*. Billings, Montana: Bureau of Land Management.

MASSEY, GARTH, 1977. *Intersecting Careers of Work and Non-Work Among a Mobile Population*. Paper presented at the annual meeting of the American Sociological Association, Chicago, Illinois.

MATSON, R.E. AND BLUMERS, J.W., 1973. *Quality and Reserves of Strippable Coal, Selected Deposits Southeastern Montana*. Montana Bureau of Mines and Geology, Bulletin 91.

MATSON, R.E. AND PINCHOCK, J.M., 1977. *Geology of the Tongue River Member, Fort Union Formation, Eastern Montana*. Colorado Geological Survey Resource Series 1.

MCKEAN, JOHN. *Powder River I-O Model*. Ft. Collins, Colorado: Colorado State University.

MONTANA DEPARTMENT OF FISH AND GAME, 1978. *Montana Statewide Comprehensive Outdoor Recreation Plan*. Bozeman, Montana: Color World of Montana, Inc.

MONTANA DEPARTMENT OF STATE LANDS AND OFFICE OF SURFACE MINING, 1981. *Draft Tongue River, Montana, Petition Evaluation Document*.

MUNSON AND MUNSON, 1980. *Cultural Resource Investigation and Assessment in the Big Sky Mine Study Area A, Reports of Investigations No. 12*. Butte, Montana: Mineral Research Center

OFFICE OF SURFACE MINING, 1981. Discussed mine inventories in the Powder River Basin of Wyoming with Bill Killam. (Personal communication). Manton Botsford, Resource Specialist, Casper District Office.

PACKER, PAUL E., 1974. *Rehabilitation Potential and Limitations of Surface-Mines Land in the Northern Great Plains,* General Technical Report INT-14, USDA, Forest Service.

PHILLIPS, R.L, 1979. *Winter Distribution (1975-1978) of Pronghorn Antelope, Mule Deer and White-tailed Deer in the Decker Sub-region of Montana and Wyoming*. Sponsored by BLM and USGS.

POWDER RIVER BOARD OF COUNTY COMMISSIONERS, 1981. *Update of Powder River Comprehensive Plan 1979*. Broadus, Montana.

QAYYUM, M.A. AND KEMPER, W.V., 1962. *Salt Concentration Gradients in Soils and their Affects on Moisture Movement and Evaporation*. Soil Science Vol. 93, No. 5.

RADIAN, 1980. *Air Quality Assessment Study for the Powder River Basin Regional Environmental Impact Statement, Draft. Statement Component: Affected Environment*. Austin Texas.

RADIAN, 1981. *Air Quality Assessment Study for the Powder River Basin Regional Environmental Impact Statement, Draft. Statement Component: Environmental Consequences*. Austin Texas.

RAHN, P.H., 1975. *Potential of Coalstrip Mine Fill as Aquifers in the Powder River Basin*. Quarterly Progress Report and Assessment and Evaluation of Work Completed to date. Engineering and Experiment Station, South Dakota, School of Mine and Technology, Rapid City, South Dakota.

RAU, JOHN G. AND WOOTEN, DAVID C., 1980. *Environmental Impact Analysis Handbook*. San Francisco, California: McGraw-Hill Book Company.

REHER, CHARLES A., 1979. *Volume I. The Western Powder River Basin Survey*. Casper, Wyoming: BLM contracted Class II inventory.

RIFFENBURG, H.B., 1925. *Chemical Character of Ground Water of the Northern Great Plains*. USGS Water Supply Paper 560B.

SIMON, R.B., 1972. Seismicity in *Geologic Atlas of the Rocky Mountain Region*. Rocky Mountain Association of Geologists. Denver, Colorado: Hirshfield Press.

SOIL CONSERVATION SOCIETY OF AMERICA AND WRCC-21, 1980. *Adequate Reclamation of Mined Lands? Symposium*. Billings, Montana.

REFERENCES

STINSON, THOMAS F. *Coal Revenue Model.* Minneapolis-St. Paul, Minnesota: University of Minnesota.

UNIVERSITY OF WYOMING, 1976. *Campbell County Parks and Recreation Department Citizens' Survey.* Laramie, Wyoming: Human Services Project.

UNIVERSITY OF WYOMING, 1977. *Wyoming General Soils Map.* Laramie, Wyoming.

U.S. CENSUS BUREAU, 1981. Preliminary 1980 census figures. Denver, Colorado.

U.S. DEPARTMENT OF AGRICULTURE, COMMITTEE FOR RURAL DEVELOPMENT, 1975. *Situation Statement Rosebud-Treasure Counties.* Portland, Oregon: Soil Conservation Service.

U.S. DEPARTMENT OF AGRICULTURE, BIG HORN COUNTY COMMITTEE FOR RURAL DEVELOPMENT, 1976. *Big Horn County Situation Statement.* Big Horn County, Montana.

U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, 1976. *Long Range Program of Resource Conservation, Powder River Conservation District.* Portland, Oregon: Soil Conservation Service.

U.S. DEPARTMENT OF AGRICULTURE, MONTANA DEPARTMENT OF AGRICULTURE, 1978. *Montana Agricultural Statistics.* Bozeman, Montana: Color World of Montana.

U.S. DEPARTMENT OF AGRICULTURE, WYOMING CROP REPORTING BOARD, 1978. *Wyoming Agricultural Statistics.* Cheyenne, Wyoming.

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, 1979. *RARE II, Roadless Area Review and Evaluation, Final Environmental Statement.* Washington, D.C.: Government Printing Office.

U.S. DEPARTMENT OF AGRICULTURE, 1980a. *Montana Agricultural Statistics. Vol. XVIII.* Montana Department of Agriculture and the Montana Crop and Livestock Reporting Service.

U.S.DEPARTMENT OF AGRICULTURE, 1980b. *Agricultural Statistics, 1980.* Economics, Statistics, and Cooperatives Service.

U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, 1981. Types of agricultural lands in southeastern Montana. (Personal communication). Clarke McClung, Resource Specialist, Casper District Office, 1981.

U.S. FISH AND WILDLIFE SERVICE, WELUT, 1980. *Surface Cover Type Classification Overlays.* Ft. Collins, Colorado.

U.S. GEOLOGICAL SURVEY, MONTANA DEPARTMENT OF STATE LANDS, 1979. *Final Environmental Statement, Northern Powder River Basin Coal, Montana.* Washington, D.C.: Government Printing Office.

U.S. GEOLOGICAL SURVEY, 1980a. *Water Resources Data for Montana, Water Year 1979.* Water Data Report MT-79-1

U.S. GEOLOGICAL SURVEY, 1980b. *Water Resources Data for Wyoming, Water Year 1979. Volume 1.* Missouri River Basin: Water Data Report WY-79-1.

VAN VOAST, W.A. AND HEDGES, R.B., 1975. *Hydrologic Aspects of Existing and Proposed Strip Coal Mines Near Decker, Southeastern Montana.* Montana Bureau of Mines and Geology Bulletin 97.

WAITE, DON, 1981. Agricultural Economist at Montana State Office, BLM, Billings, Montana.

WELLMAN, BARRY, 1979. *The Community Question: The Intimate Networks of East Yonkers.* American Journal of Sociology 84:1201-1231.

WENTLAND, HAROLD J., 1980. *Statewide Wildlife Survey and Inventory W-130-R-11. Big Game Survey and Inventory (Antelope) Region 7.* Miles City Montana: Montana Fish and Game.

WYOMING DEPARTMENT OF ECONOMIC PLANNING AND DEVELOPMENT, 1979, 1980. Cheyenne, Wyoming.

WYOMING DEPARTMENT OF EDUCATION, WYOMING PUBLIC SCHOOLS FUND ACCOUNTING AND REPORTING, 1979-1980. Cheyenne, Wyoming.

WYOMING GAME AND FISH, 1977a. *Annual Report of Big Game Harvest.* Cheyenne, Wyoming.

WYOMING GAME AND FISH, 1977b. *Annual Report of Upland Game Harvest.* Cheyenne, Wyoming.

WYOMING GAME AND FISH, 1978a. *Annual Report of Big Game Harvest.* Cheyenne, Wyoming.

WYOMING GAME AND FISH, 1978b. *Annual Report of Upland Game & Furbearer Harvest.* Cheyenne, Wyoming.

WYOMING GAME AND FISH, 1979a. *Annual Report of Big Game Harvest.* Cheyenne, Wyoming

WYOMING GAME AND FISH, 1979b. *Annual Report of Upland Game & Furbearer Harvest.* Cheyenne, Wyoming.

WYOMING GAME AND FISH, 1979c. *Eastern Powder River Coal EIS Contract.* Cheyenne, Wyoming

WYOMING RECREATION COMMISSION, 1975. *State Comprehensive Outdoor Recreation Plan (SCORP).* Cheyenne, Wyoming.

WYOMING RECREATION COMMISSION, 1980. *State Comprehensive Outdoor Recreation Plan (SCORP).* Cheyenne, Wyoming.

WYOMING SECURITY EMPLOYMENT COMMISSION. Quarterly periodicals. Casper, Wyoming.

ZANDER, RICHARD, 1981. Wildlife inventory and problems in Montana coal areas. (Personal communication). Michael McLellan, Resource Specialist, Casper, District Office.

APPENDIX A

AIR QUALITY

TABLE A-1

FEDERAL, MONTANA, AND WYOMING MAXIMUM ALLOWABLE INCREASES (INCREMENTS)

FOR THE PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY

Pollutant	Averaging Time	Maximum Allowable Air Quality Increases (Ug/m^3) Class I	Class II	Class III
Sulfur Dioxide (SO_2)	Annual Mean	2	20	40
	24-Hour a/	5	91	182
	3-Hour a/	25	512	700
Total Suspended Particulates (TSP)	Annual Mean	5	19	37
	24-Hour a/	10	37	75

---

a/ The increments for these averaging times are not to be exceeded more than once per year.

TABLE A-2
NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Average Time a/	Standards							
		Federal b/ Primary		Federal c/ Secondary		Montana State		Wyoming State	
		(ug/m^3)	(ppm)	(ug/m^3)	(ppm)	(ug/m^3)	(ppm)	(ug/m^3)	(ppm)
Total Suspended Particulate (TSP)	Annual Geometric Mean	75	-	60	-	75	-	60	-
	24-Hour	260	-	150	-	200	-	150	-
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	80	0.03	-	-	60	0.02	60	0.02
	24-Hour	365	0.14	-	-	260 d/	0.10 d/	260	-
	3-Hour	-	-	1,300	0.5	650 e/	0.25 e/	1,300	0.5
	1-Hour						0.50 e/		
Nitrogen Dioxide (NO^2)	Annual Arithmetic Mean	100	0.05	100	0.05	-	0.05	100	0.05
	1-Hour						0.30		
Carbon Monoxide (CO)	8-Hour	10,000	9.0	10,000	9.0	10,000	9.0	10,000	9.0
	1-Hour	40,000	35.0	40,000	35.0	-	23.0	40,000	5.0
Non-Methane Hydrocarbons f/ (NMHC)	3-Hour (6 a.m.-9 a.m.)	160	0.24	160	0.24	-	-	160	0.24
Ozone (O_3)	1-Hour	235	0.12	-	-	-	.10	235	0.12
Lead (Pb)	3-Month	1.5	-	1.5	-	1.5	-	-	-

---

a/ Standards for averaging times other than annual or 3-month are not to be exceeded more than once per year.
b/ Levels deemed necessary to protect public health with an adequate margin of safety.
c/ Levels deemed necessary to protect public welfare from any known or anticipated adverse effects.
d/ Not to be exceeded more than once/year.
e/ Not to be exceeded for more than 18 days in a 12 month period.
f/ For use as guide in achieving ozone standards.

APPENDIX B

WILDLIFE

FIGURE B-1

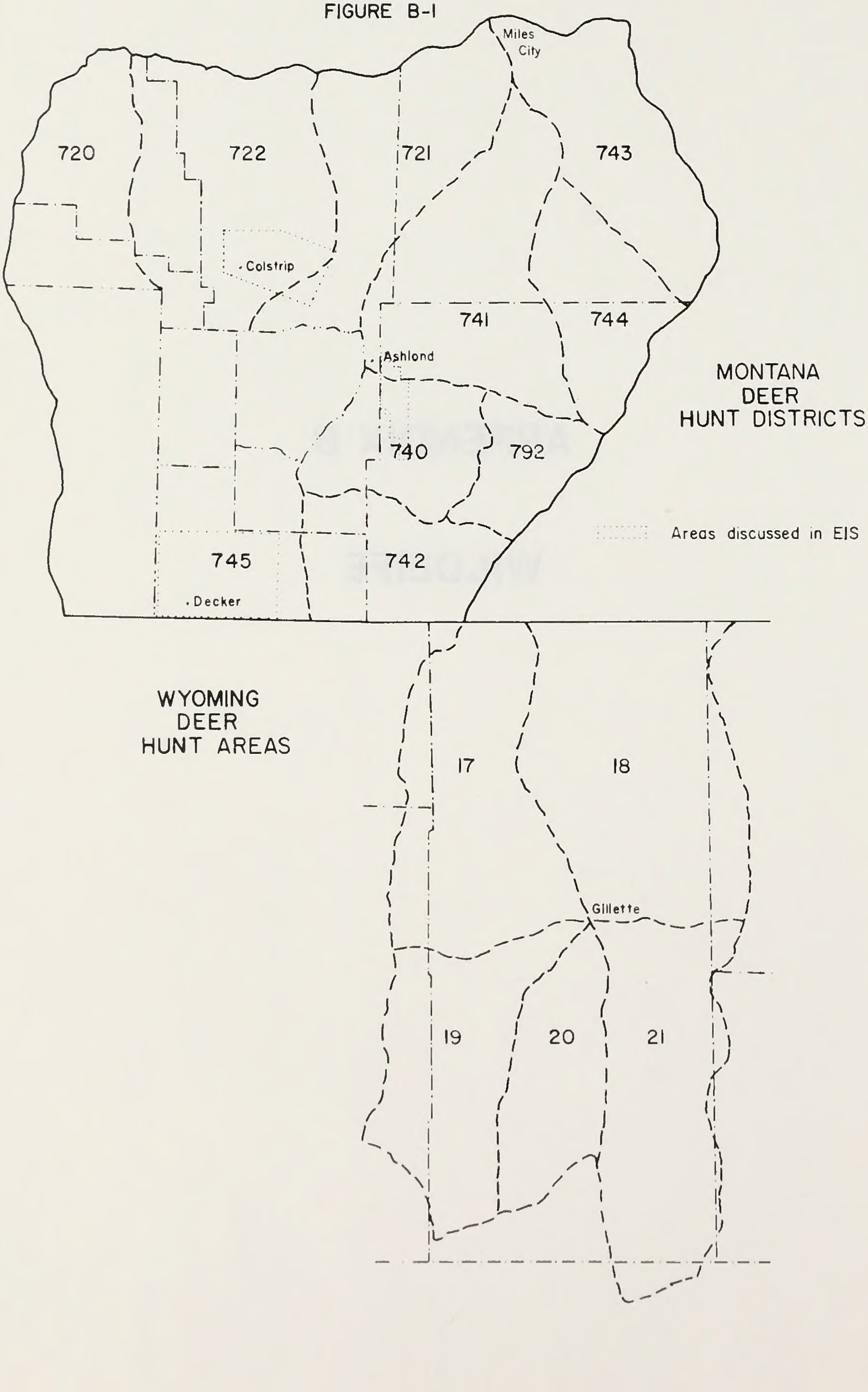
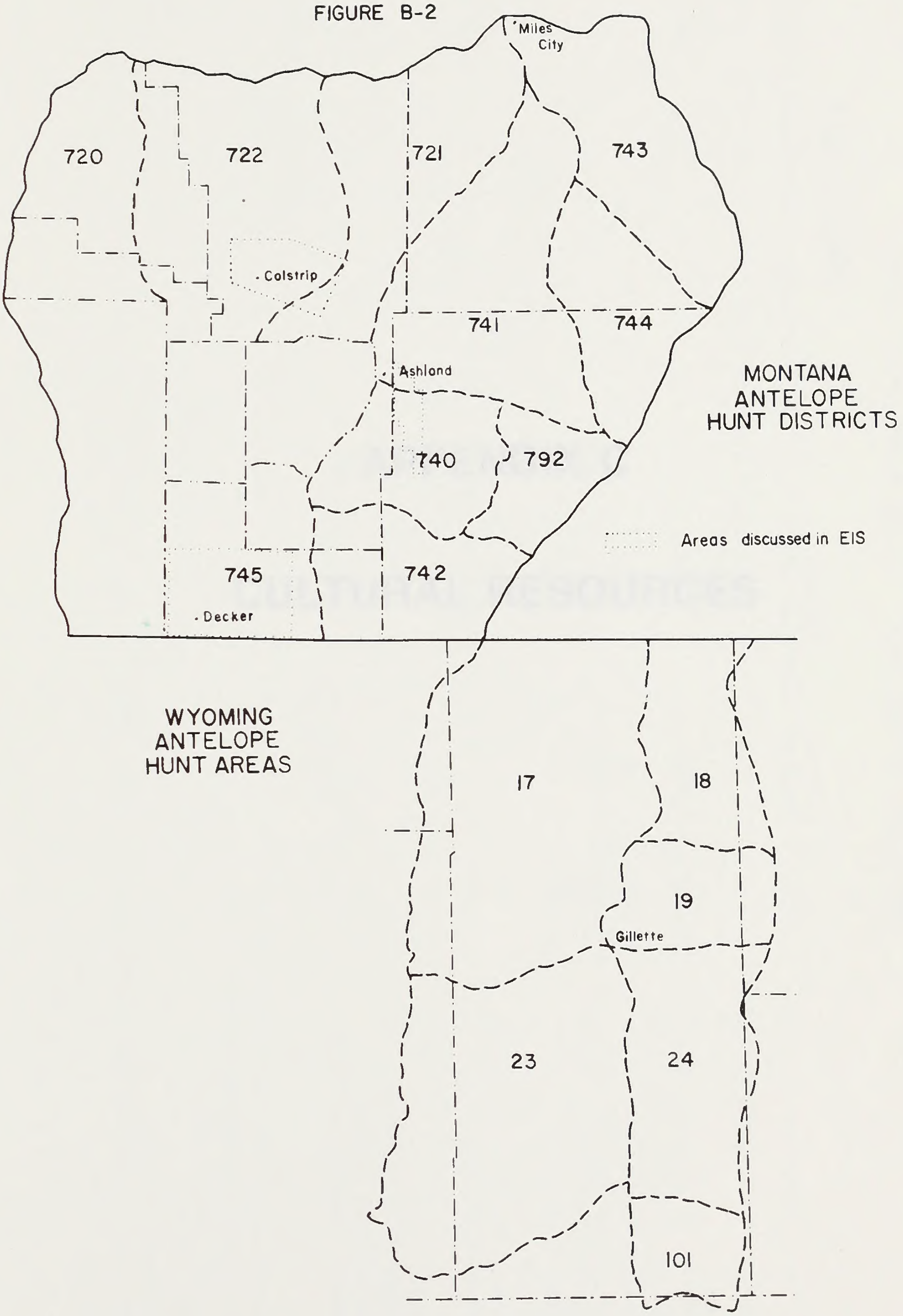

Miles City
720
722
721
743
Colstrip
741
744
Ashlond
MONTANA
DEER
HUNT DISTRICTS
740
792
Areas discussed in EIS
745
742
Decker
WYOMING
DEER
HUNT AREAS
17
18
Gillette
19
20
21

FIGURE B-2


Miles City
720
722
721
743
Colstrip
741
744
Ashland
MONTANA ANTELOPE HUNT DISTRICTS
740
792
Areas discussed in EIS
745
742
Decker
WYOMING ANTELOPE HUNT AREAS
17
18
19
Gillette
23
24
101

APPENDIX C

CULTURAL RESOURCES

TABLE C-1
IDENTIFIED CULTURAL SITES FOR THE POWDER RIVER REGION

Location	Acres	Sites Located	Average Density (Mi^2)	Historic Sites: On Nat'l Reg.	Historic Sites: Recommended for Nat'l Reg.
Montana					
Otter Creek Drainage a/	9,000	120	8.5		
Pumpkin, Broadus and Foster Creeks b/	5,800	59	6.5		
Birney Area b/	9,000	98	7		
Colstrip Area c/	2,525	86	26.5		
Spring Creek d/	3,770	47	7.5		
Big Horn County				5	18
Rosebud County				1	9
Powder River County					3
Wyoming					
Rawhide Mine Lease e/			16.5		
Caballo Mine Lease f/			10		
Campbell County			2 g/		1

a/ Bryant, Gehr and Rollefson, 1980.
b/ BLM, unpublished manuscript, Clark, n.d.
c/ Munson and Munson, 1980.
d/ Fox, 1978.
e/ Anderson, 1980.
f/ Personal communication, Mary Feathers, OSM, 1981.
g/ Reher, 1979.

APPENDIX D

VISUAL RESOURCES

Scenic quality classes are defined by a system rating seven key factors - landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modification. There are three scenic quality classes:

Class A - Areas that combine the most outstanding characteristics of each rating factor.

Class B - Areas in which there is a combination of some outstanding features and some which are fairly common to the physiographic region.

Class C - Areas in which the features are fairly common to the physiographic region.

Management classes determine the amount of modification allowed to the basic elements of the landscape. There are five classes:

Class I - Very limited management activity is allowed. Created contrasts must not attract attention. This classification applies to wilderness areas, wild and scenic rivers, etc.

Class II - Changes in any of the basic elements caused by management activity should not be evident in the characteristic landscape. Contrasts are seen but must not attract attention.

Class III - Contrasts to the basic elements caused by a management activity are evident, but should remain subordinate to the existing landscape.

Class IV - Any contrast attracts attention and is a dominant feature of the landscape in terms of scale, but it should repeat the form, line, color, and texture of the characteristic landscape.

Class V - This classification is applied to areas where the natural character of the landscape has been disturbed to a point where rehabilitation is needed to bring it up to one of the four other classifications. The classification also applies to areas where there is potential to increase the landscape's visual quality. It is often used as an interim classification until objectives of another class can be reached.

APPENDIX E

RECREATION

TABLE E-1
HUNTING STATISTICS FOR THE POWDER RIVER REGION

Montana

	Deer Licenses	Harvest	Rec. Days	Antelope Licenses	Harvest	Rec. Days	Bighorn Licenses	Sheep Harvest	Rec. Days
1971-74 Average	44,200	34,600	169,000	11,650	8,500	35,000	2	1	20
1975	48,900	13,200	194,000	10,570	7,850	31,700	2	2	16
1976	15,766	8,961	69,502	8,488	6,307	25,464	2	1	10

	Game Bird Hunters	Harvest	Rec. Days	Small Game Hunters	Harvest	Rec. Days	Waterfowl Hunters	Harvest	Rec. Days
1970-74 Average	36,916	72,416	---	No Data			No Data		
1975	45,744	81,544	66,663	No Data			No Data		

Wyoming

	Deer Hunters	Harvest	Rec. Days	Antelope Hunters	Harvest	Rec. Days	Elk Hunters	Harvest	Rec. Days
1977	52,607	35,829	145,165	31,416	29,526	70,275	9,585	2,423	42,203
1978	49,260	27,679	130,344	29,097	27,293	68,502	10,211	1,738	48,287
1979	49,224	23,692	140,803	22,995	20,899	60,678	11,006	2,352	49,466

	Game Bird Hunters	Harvest	Rec. Days	Small Game Hunters	Harvest	Rec. Days	Waterfowl Hunters	Harvest	Rec. Days
1977	12,272	48,037	35,742	4,451	43,571	19,426	3,371	16,152	15,684
1978	10,641	38,680	30,245	5,064	47,194	21,542	3,292	16,082	15,635
1979	11,081	42,567	31,460	3,870	22,626	17,232	3,338	17,502	16,247

Sources: Wyoming Game and Fish Annual Reports, 177a,b; 1978a,b; 1979a,b.
Montana Fish and Game, 1978.

APPENDIX F

TRANSPORTATION

FIGURE F-1

MONTANA HIGHWAY SYSTEM AND

AVERAGE DAILY TRAFFIC (ADT) 1979

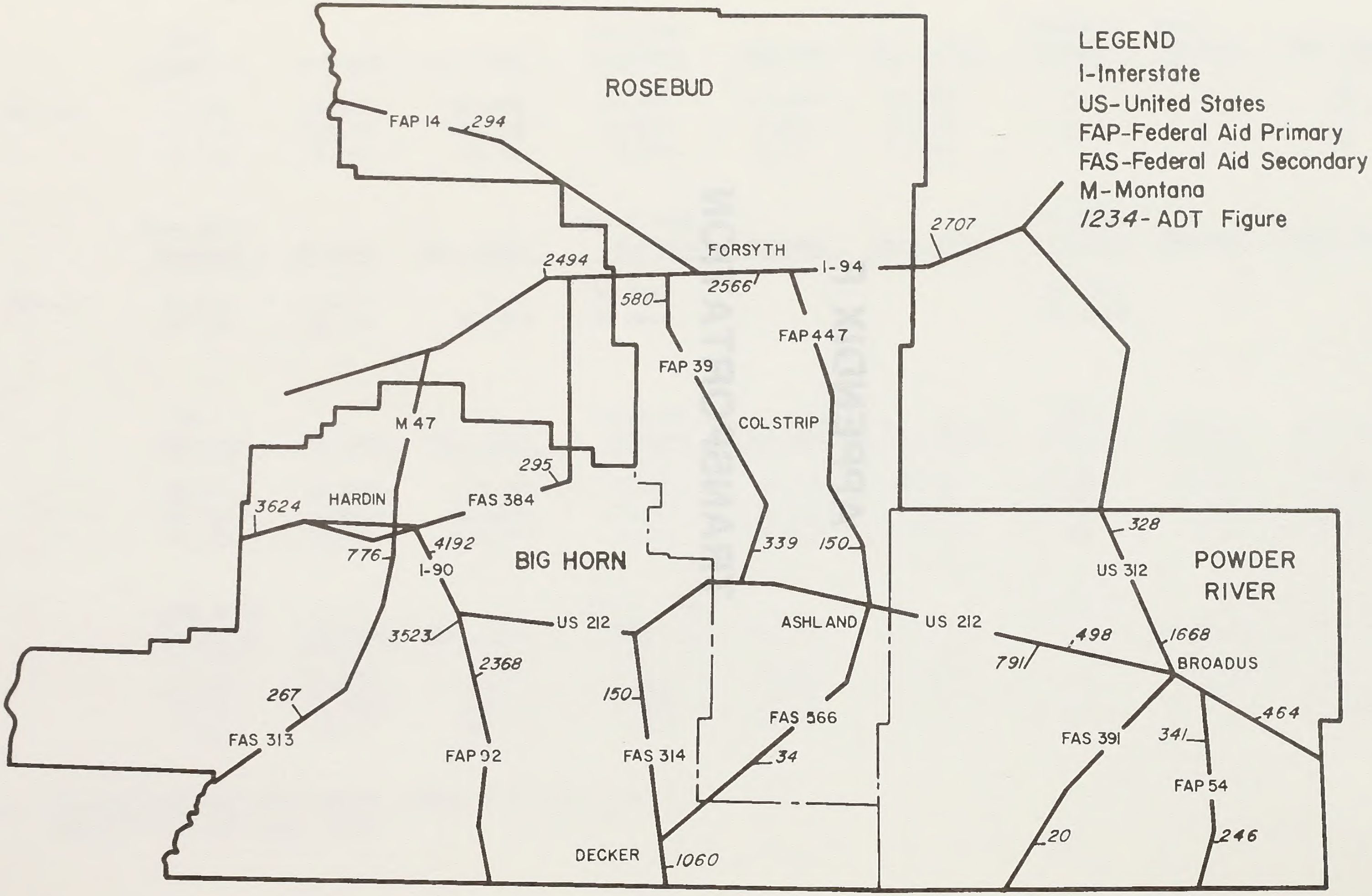


FIGURE F-2

WYOMING HIGHWAY SYSTEM AND AVERAGE DAILY TRAFFIC (ADT) 1978

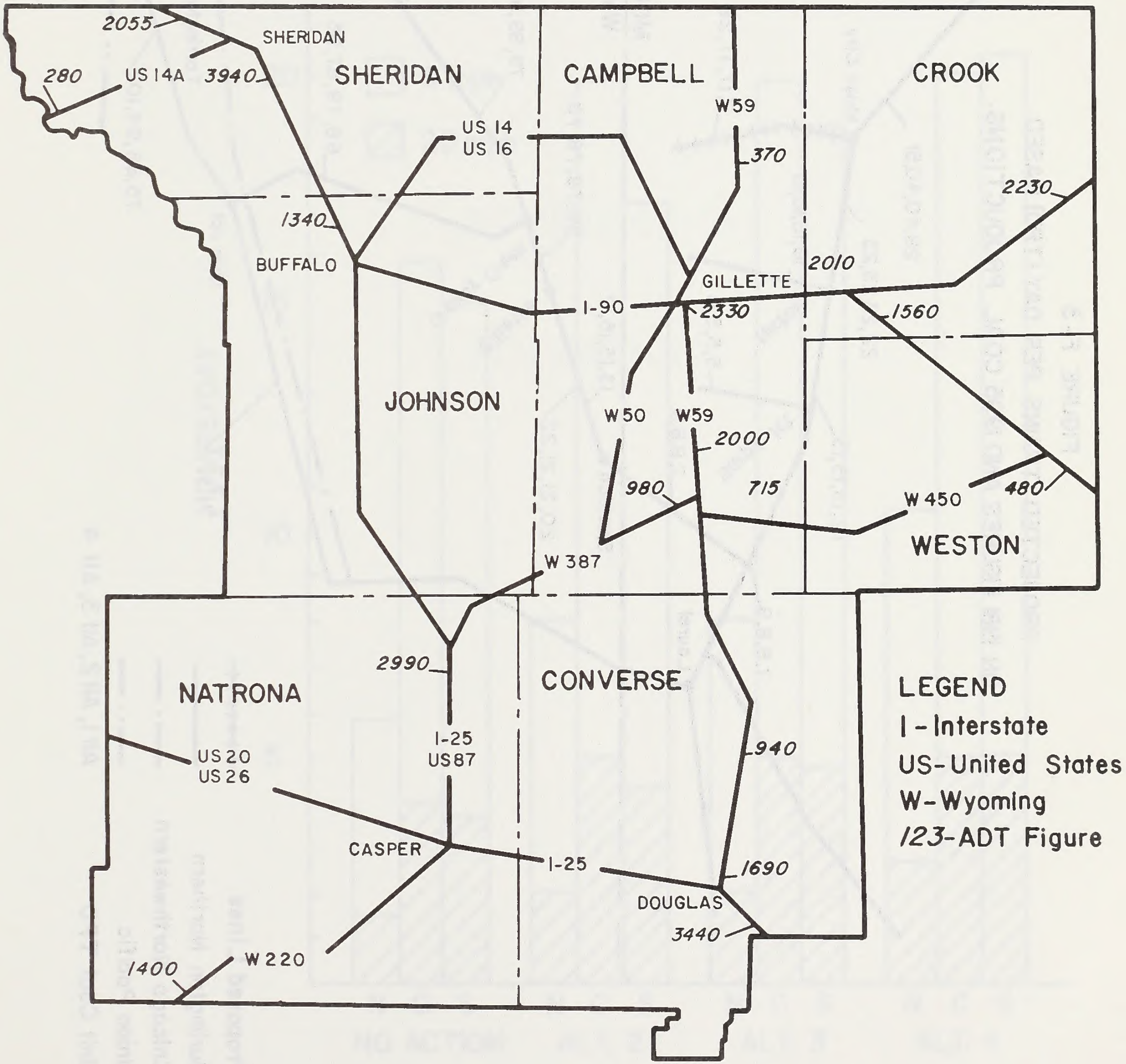


FIGURE F-3

PROJECTED TRAINS PER DAY (TPD) BASED
ON 1981 FIGURES AND 1995 COAL PRODUCTIONS.

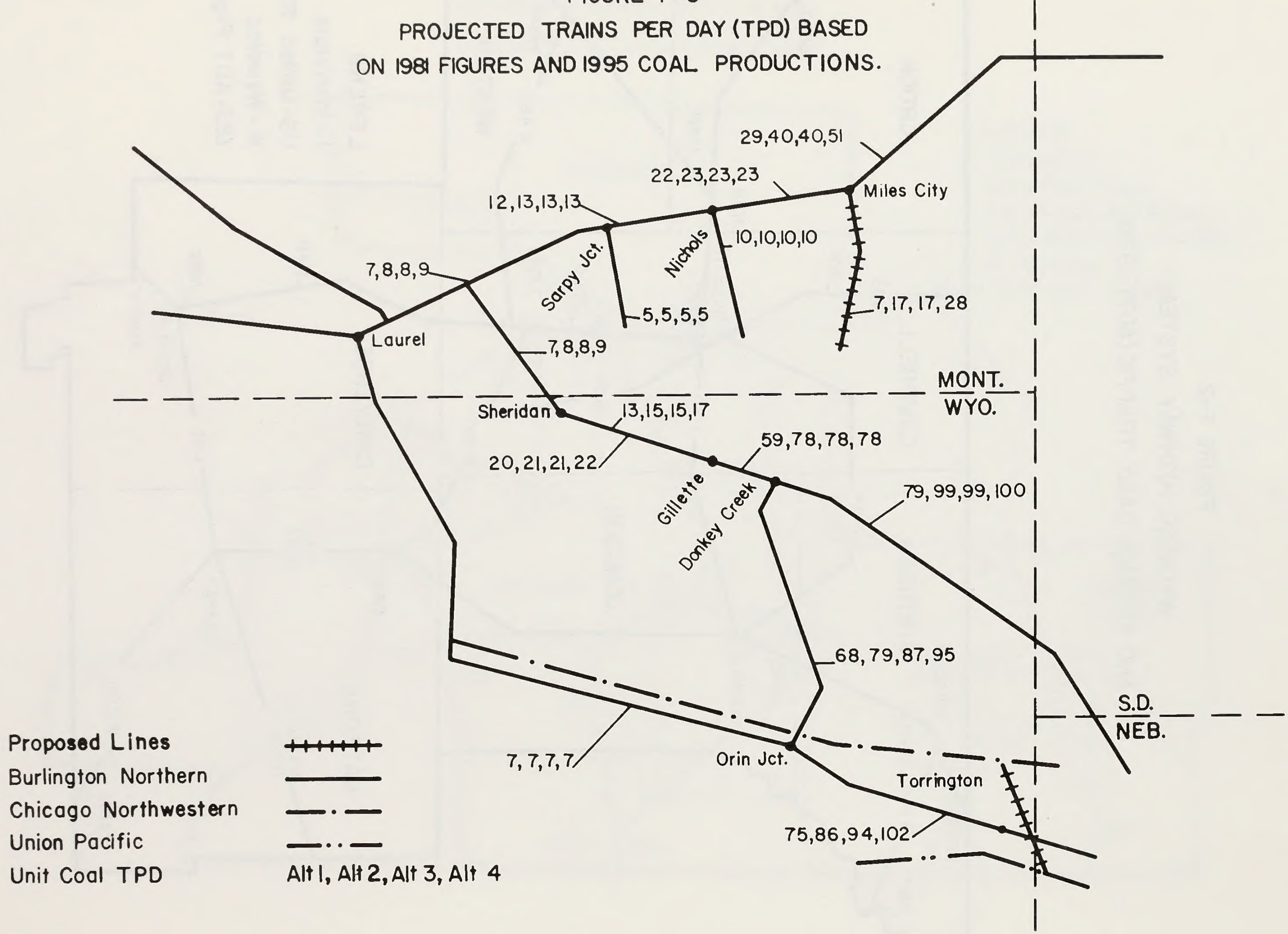
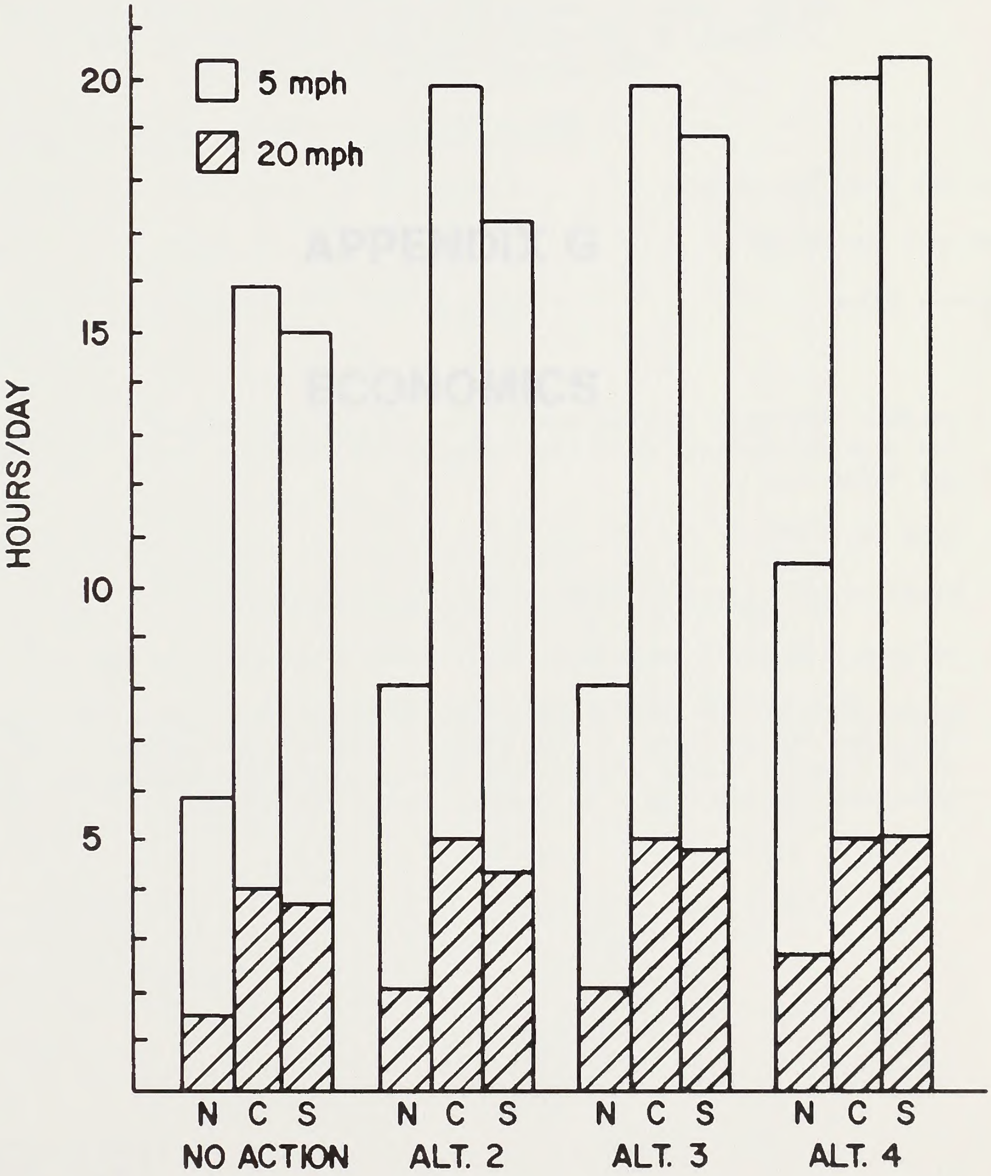


FIGURE F-4
INTERRUPTIONS AT AT-GRADE CROSSINGS AT PEAK PRODUCTION



N-NORTHERN LINE
C-CENTRAL LINE
S-SOUTHERN LINE

APPENDIX G

ECONOMICS

TABLE G-1
PRESENT VALUE OF FUTURE AVERAGE GROSS SALES FROM ONE ACRE COMPARED TO POTENTIAL COAL ROYALTIES FROM ONE ACRE IN THE MONTANA POWDER RIVER REGION

	Winter Wheat a/	Alfalfa Hay a/	Coal b/
Average Gross Value/Acre c/	$ 90.26	$122.06	$866.07
Interest Factor d/	4.3552	4.3552	.9091
Present Value	$393.10	$531.60	$787.34

a/ Assumes that coal leasing would occur on acreage devoted to one of the two most extensively harvested crops in the Montana Powder River Region. See Table G-5.

b/ From Table G-3.

c/ Based on 1979 average gross values. See Table G-6.

d/ Derived from the formula $\sum_{t=1}^{n} (1/1+k)^{t}$, where n equals 6, in the case of the crops, or 1 in the case of the coal. This assumes 1 year for mining and 5 years for reclamation. k, the costs of capital, is assumed to be 10 percent in all cases. Stated simply, the formula calls for a summation of all quantities obtained as t is changed from 1 through n.

TABLE G-2
1979 CROP PRODUCTION AND CATTLE INVENTORY IN POWDER RIVER AND ROSEBUD COUNTIES COMPARED TO MONTANA AND THE U.S.

	Bushels Per Acre	Total Production Million Bushels
Barley		
Big Horn County [a]	40.0	.69
Powder River County [a]	22.5	.11
Rosebud County [a]	45.0	.29
Montana [a]	39.0	40.56
U.S. [b]	50.6	378.07
Corn (Grain)		
Big Horn County [a]	76.0	[c]
Powder River County [a]	---	---
Rosebud County [a]	78.0	.08
Montana [a]	77.0	.39
U.S. [b]	109.4	7,763.77
Oats		
Big Horn County [a]	57.0	.12
Powder River County [a]	31.0	.05
Rosebud County [a]	48.0	.08
Montana [a]	39.0	5.46
U.S. [b]	54.4	534.39
All Wheat		
Big Horn County [a]	25.6	2.00
Powder River County [a]	24.3	0.98
Rosebud County [a]	25.2	1.07
Montana [a]	22.7	116.48
U.S. [b]	34.2	2,141.73
All Hay	Tons Per Acre	Million Tons
Big Horn County [a]	2.26	.17
Powder River County [a]	1.37	.09
Rosebud County [a]	2.04	.09
Montana [a]	1.80	4.29
U.S. [b]	2.39	145.88
Cattle Inventory	January 1, 1,000 head	
Big Horn County [a]	115.6	
Powder River County [a]	77.6	
Rosebud County [a]	86.1	
Montana [a]	2,607.0	
U.S. [b]	110,864.0	

[a] USDA, 1980a.
[b] USDA, 1980b.
[c] Less than 10,000 bushels.

TABLE G-3
AVERAGE COAL RESERVES PER ACRE AND POTENTIAL COAL ROYALTIES PER ACRE IN THE MONTANA POWDER RIVER REGION

Recoverable Reserves (Million Tons) a/	2,427.3
Coal Acreage a/	56,053
Average Recoverable Reserves/Acre (Tons/Acre)	43,404
Royalty Per Ton b/	$ .02
Average Gross Royalty Per Acre	$ 866.07

a/ Derived from Table 1-1 in Chapter 1.

b/ Assumes Annual Royalty Payments of 2 cents per ton of coal mined, based on a range of 2 cents to 35 cents per ton of coal mined for regional landowner lease agreements.

TABLE G-4
GROSS RECEIPTS PER ACRE FROM LIVESTOCK AND CROPS IN THE MONTANA POWDER AND RIVER REGION

Livestock and Livestock Products

Gross Receipts a/	$73,492,900.00
Rangeland (Acres) b/	6,460,824
Average Gross Receipts/Acre	$ 11.38

All Crops

Gross Receipts a/	$22,725,000.00
Croplands (Acres) b/	635,544
Average Gross Receipts/Acre	$ 35.76

a/ USDA, Montana Department of Agriculture, 1980.
b/ From Table 3-3 in Chapter 3.

TABLE G-5
ACRES HARVESTED BY CROP IN 1979 IN THE MONTANA POWDER RIVER REGION a/

Crop	Acres Harvested
Winter Wheat	138,500
Durum Wheat	300
Spring Wheat b/	22,000
Barley	28,400
Corn	10,500
Sugarbeets	4,810
Dry Beans	900
Oats	5,300
Alfalfa Hay	140,300
Other Hay	39,900

a/ USDA, Montana State Department of Agriculture, 1980.

b/ Excludes Durum Wheat.

TABLE G-6
AVERAGE GROSS VALUE PER ACRE FOR THE TWO MOST EXSTENSIVELY HARVESTED CROPS IN THE MONTANA POWDER RIVER REGION IN 1979

	Winter Wheat	Alfalfa Hay
Total Value a/	$12,501,300	$17,126,100
Acreage Harvested a/	138,500	140,300
Average Gross Value/Acre	$ 90.26	$ 122.06

a/ USDA, Montana State Department of Agriculture, 1980.

APPENDIX H

COMMENTS AND RESPONSES

COMMENTS AND RESPONSES

Introduction

Copies of the Draft EIS were sent to federal, state, and local government agencies, nongovernment organizations (such as conservation groups), industry representatives and private citizens for their review and comment. Some reviewers were confused by the public hearing process, review period or hearing schedules. Notice of availability was published on July 9, 1981 in the *Federal Register*. Due to publishing delays on the DEIS a second notice of availability was published July 24, 1981 amending the former notice by extending the comment period to September 17, 1981. Hearings in Casper on July 29th and Billings on July 30th were supplemented by hearings in Gillette on August 19th and in Broadus, Montana on August 20, 1981.

Comments were received from U.S. Fish and Wildlife Service, U.S. Geological Survey, Bureau of Mines, and the Office of Surface Mining. Federal agencies which did not respond include Bureau of Indian Affairs, Bureau of Reclamation, National Park Service, and the U.S. Forest Service. Comments from U.S. Geological Survey and Office of Surface Mining were submitted in an informal, working, relationship and are not reproduced in this document.

This section includes copies of letters commenting on the DEIS and comment papers from the minutes of six public hearings. Most letters have been duplicated here in their entirety but exceptionally long attachments are available for examination at the Casper District Office, 951 Rancho Road, Casper, Wyoming.

Letters and oral comments on the DEIS were reviewed and considered by the EIS Team in preparation of the Final EIS and those that presented new data, questioned facts on analyses, and raises questions or issues bearing directly upon the DEIS were fully considered and evaluated. The public hearings were recorded verbatim by a court reporter. Copies of the full transcripts are available for public review at the BLM Casper District Office. Oral comments as reported in the transcripts have been included in this chapter and appear with the letters of comments (numbers 43-57).

The substantive issues raised in these letters and public hearings have been extracted, edited, and grouped by topic. A response to each of these issues has been given. In this way the reader may easily see how, topic by topic, the informed opinions of others agree or disagree with the assessments made by the EIS team. The issues have been numbered within these topics and appear under the name of each reviewer in the List of Reviewers given below in the Index to Appendix H. By referring to the issue numbers indicated the reader may determine what issues were raised by each reviewer and find the response given.

COMMENTS AND RESPONSES

List of Issues

Policy, and the Purpose and Need for Action 1

Scoping, Baseline Analysis and Assumptions 2

Geology and Other Minerals 3

Water Resources 4

Air Quality 5

Soils, Vegetation, and Reclamation 6

Wildlife 7

Cultural Resources 8

Visual Resources 9

Land Use 10

Recreation 11

Transporation 12

Noise 13

Sociology 14

COMMENTS and RESPONSES

Economics 15

Other Issues 16

List of Reviewers

Written Comments

Bureau of Mines (Denver Resource Center) 1
Issues 3-1, 3-2,

Kim Foster 2

U.S. Fish & Wildlife Service 3
Issues 2-2, 6-1, 7-1, 7-2, 7-3, 7-4

North Central Health Services 4

Five Valleys Economic Development District 5

City of Gillette 6
Issues 14-1, 14-9, 15-1

Guy and Ruth Edwards 7

Powder River County Planner 8
Issues 2-11, 2-13, 2-15, 2-17, 3-1, 4-1, 4-4, 4-5, 4-6, 4-7, 5-1, 5-2, 6-2, 8-7, 12-1, 13-1, 14-2, 14-3, 14-4, 14-5, 14-6, 14-9, 14-10, 14-16, 14-17, 15-6, 15-19, 15-21, 15-22, 15-23, 15-24

Cyprus Coal Company 9

Powder River Assistant County Planner 10
Issues 14-9, 14-15, 15-2, 15-3, 15-4, 15-5

Richard Jones 11
Issues 15-5, 15-18

Hampshire Energy 12
Issue 3-4

COMMENTS AND RESPONSES

Texas Energy Services 13
Issues 2-4, 2-8, 2-9, 14-7

Kenneth Williams 14

Royal Land Company 15

Bureau of Mines (Division of Mineral Assessment Washington D.C.) 16
Issues 3-1, 3-3

Clarke Mills and Mills Bros 17

Western Energy Company 18
Issues 4-2, 5-3, 5-4, 5-5, 14-10

Campbell County Commissioners 19

Wyoming Game & Fish Department 20
Issues 4-3, 6-1, 6-3, 7-5, 7-6, 7-7, 11-1, 11-2, 11-3, 16-1

Chugach Natives, Inc 21

North Antelope Coal Company 22
Issue 2-1

Carter Mining Company 23
Issue 3-4

John Wiener for Sierra Club 24
Issues 2-3, 2-4, 2-15, 6-3, 6-4, 14-11

Tongue River Agricultural Protection Association 25
Issues 15-7, 15-8

National Wildlife Federation 26
Issues 1-1, 2-4, 2-5, 2-6, 2-7, 15-5

Governor of Wyoming 27
Issue 2-27

COMMENTS and RESPONSES

Wyoming Geological Survey 28
Issue 2-28

Wyoming Recreation Commission 29
Issue 8-5

Wyoming Highway Department 30
Issue 12-6, 12-7

Wyoming State Engineers Office 31
Issues 4-12, 4-13

Wyoming Industrial Siting Administration 32
Issues 11-1, 14-9

Wyoming Department of Environmental Quality 33

Consolidation Coal Company 34

Northern Plains Resource Council 35
Issues 1-1, 2-7, 2-10, 2-11, 2-12, 2-13, 2-14, 2-15, 2-16, 2-17, 2-18, 2-19, 2-21, 2-22, 2-23, 4-8, 4-9, 4-10, 4-11, 6-3, 6-4, 6-5, 6-6, 9-1, 9-2, 10-1, 10-2, 10-3, 10-4, 12-2, 12-5, 13-2, 14-8, 14-10, 14-11, 14-12, 14-13, 14-14, 15-5, 15-6, 15-7, 15-8, 15-9, 15-10, 15-11, 15-12, 15-13

Royal Land Company 36
Issue 3-4

Wyoming Chapter of Sierra Club 37
Issue 2-13

Shell Oil Company 38
Issue 2-27

Interstate Commerce Commission 39
Issues 2-16, 2-20, 2-21, 2-22, 2-23, 2-24, 2-25, 2-26, 12-3, 12-4, 7-3, 7-8, 7-9, 8-1, 8-2, 8-3, 8-4, 8-5, 8-6

Environmental Protection Agency 40

Burlington Northern Railroad 41

Patty Kluver 42
Issue 16-2

COMMENTS AND RESPONSES

Oral Comment

Reed Zars (Powder River Resource Council) 43
Issue 2-10

Martin Holmes (Burlington Northern Coal & Minerals) 44

Bill McKay, Jr. (Northern Plains Resource Council) 45
Issues 2-10, 2-13, 6-4, 12-2

Steve Elliot (Wesco Resources) 46
Issue 2-27

Bill Lowrey (Shell Oil Company) 47
Issue 2-27

Dr. John Watt 48

Ed Swartz (Self and Powder River Resource Council) 49

Robert Matthias (Royal Land Company) 50

M.G. Symonds Clayton Tonnemaker 51

Coal Creek Mining Company 52

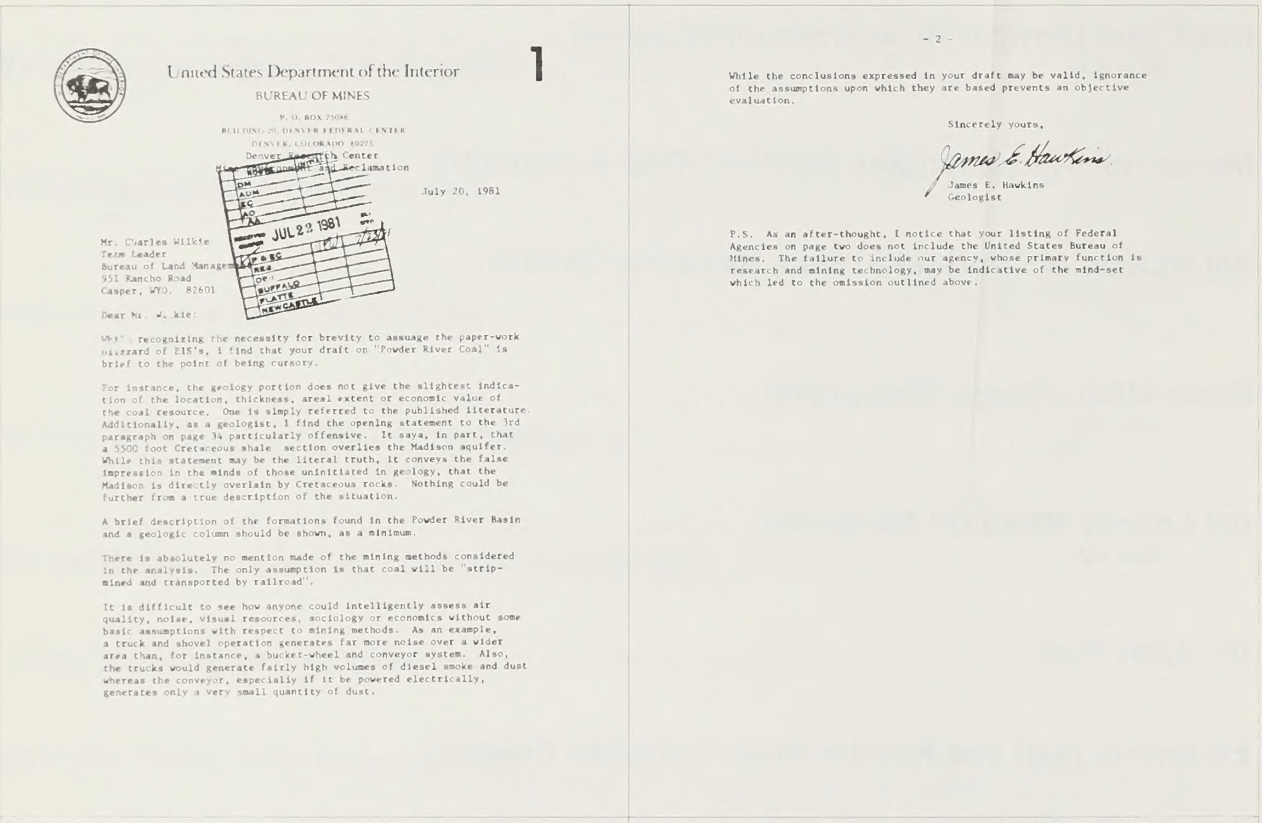
Lonnie Beach (Town of Broadus) 53
Issues 14-13, 15-14, 15-15,. 15-16, 15-17

Walter Archer (Powder River Protective Association) 54
Issues 1-1, 15-17, 15-20

Mary Daniels (NPRC and Tri-County Rancher's Association) 55
Issue 12-2

Art Hayes, Jr 56

Nick Golder 57
Issues 6-3, 6-4, 14-12



1

United States Department of the Interior
BUREAU OF MINES
P. O. BOX 25086
BUILDING 20, DENVER FEDERAL CENTER
DENVER, COLORADO 80225
Denver Research Center
Mine Environment and Reclamation

ROUTE | INITIAL
DM
ADM
EC
AO
AA
RECEIVED JUL 22 1981
P & EC
RES
OE
BUFFALO
PLATTE
NEWCASTLE

July 20, 1981

Mr. Charles Wilkie
Team Leader
Bureau of Land Management
951 Rancho Road
Casper, WYO. 82601

Dear Mr. Wilkie:

While recognizing the necessity for brevity to assuage the paper-work blizzard of EIS's, I find that your draft on "Powder River Coal" is brief to the point of being cursory.

For instance, the geology portion does not give the slightest indication of the location, thickness, areal extent or economic value of the coal resource. One is simply referred to the published literature. Additionally, as a geologist, I find the opening statement to the 3rd paragraph on page 34 particularly offensive. It says, in part, that a 5500 foot Cretaceous shale section overlies the Madison aquifer. While this statement may be the literal truth, it conveys the false impression in the minds of those uninitiated in geology, that the Madison is directly overlain by Cretaceous rocks. Nothing could be further from a true description of the situation.

A brief description of the formations found in the Powder River Basin and a geologic column should be shown, as a minimum.

There is absolutely no mention made of the mining methods considered in the analysis. The only assumption is that coal will be "strip-mined and transported by railroad".

It is difficult to see how anyone could intelligently assess air quality, noise, visual resources, sociology or economics without some basic assumptions with respect to mining methods. As an example, a truck and shovel operation generates far more noise over a wider area than, for instance, a bucket-wheel and conveyor system. Also, the trucks would generate fairly high volumes of diesel smoke and dust whereas the conveyor, especially if it be powered electrically, generates only a very small quantity of dust.

- 2 -

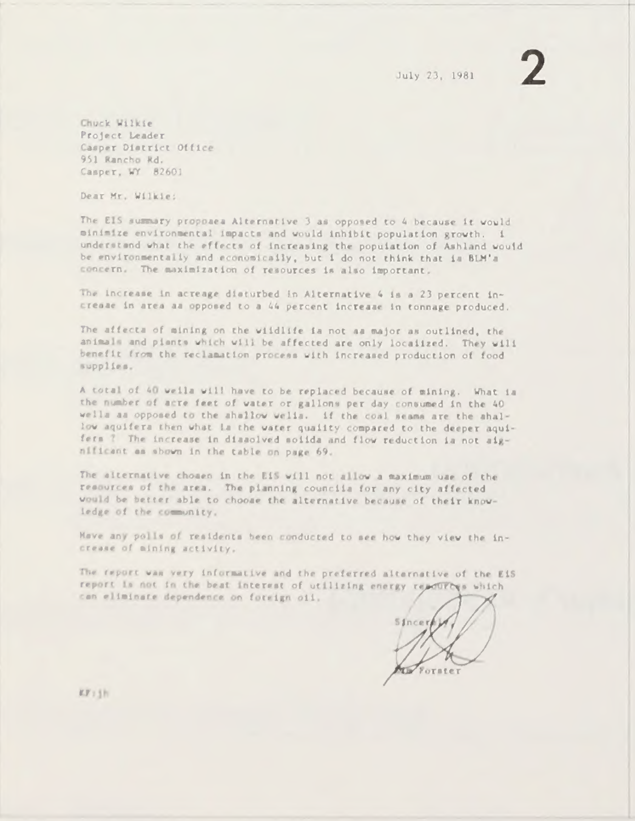
While the conclusions expressed in your draft may be valid, ignorance of the assumptions upon which they are based prevents an objective evaluation.

Sincerely yours,

James E. Hawkins

James E. Hawkins
Geologist

P.S. As an after-thought, I notice that your listing of Federal Agencies on page two does not include the United States Bureau of Mines. The failure to include our agency, whose primary function is research and mining technology, may be indicative of the mind-set which led to the omission outlined above.



2

July 23, 1981

Chuck Wilkie
Project Leader
Casper District Office
951 Rancho Rd.
Casper, WY 82601

Dear Mr. Wilkie:

The EIS summary proposes Alternative 3 as opposed to 4 because it would minimize environmental impacts and would inhibit population growth. I understand what the effects of increasing the population of Ashland would be environmentally and economically, but I do not think that is BLM's concern. The maximization of resources is also important.

The increase in acreage disturbed in Alternative 4 is a 23 percent increase in area as opposed to a 44 percent increase in tonnage produced.

The affects of mining on the wildlife is not as major as outlined, the animals and plants which will be affected are only localized. They will benefit from the reclamation process with increased production of food supplies.

A total of 40 wells will have to be replaced because of mining. What is the number of acre feet of water or gallons per day consumed in the 40 wells as opposed to the shallow wells. If the coal seams are the shallow aquifers then what is the water quality compared to the deeper aquifers ? The increase in dissolved solids and flow reduction is not significant as shown in the table on page 69.

The alternative chosen in the EIS will not allow a maximum use of the resources of the area. The planning councils for any city affected would be better able to choose the alternative because of their knowledge of the community.

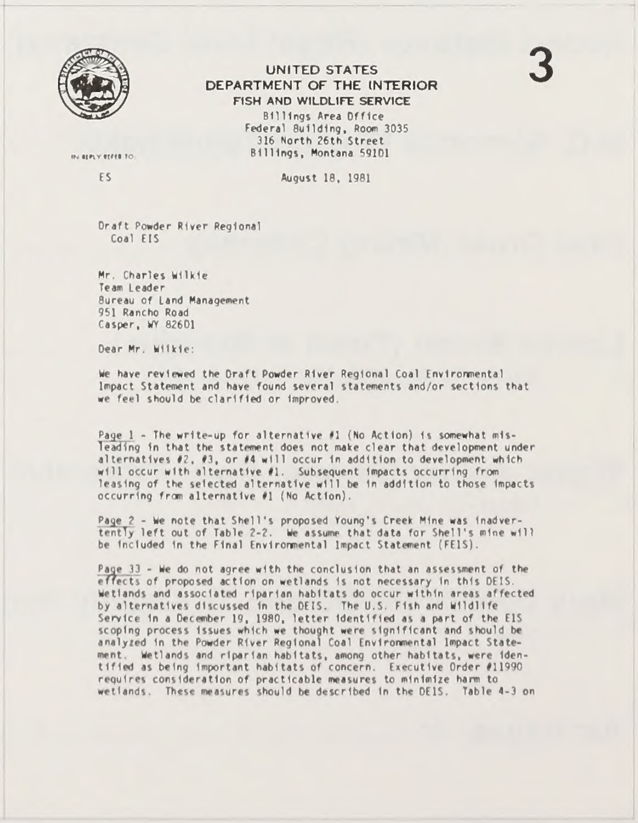
Have any polls of residents been conducted to see how they view the increase of mining activity.

The report was very informative and the preferred alternative of the EIS report is not in the best interest of utilizing energy resources which can eliminate dependence on foreign oil.

Sincerely,

[illegible] Forster

KF:jh



3

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Billings Area Office
Federal Building, Room 3035
316 North 26th Street
Billings, Montana 59101

IN REPLY REFER TO:
ES

August 18, 1981

Draft Powder River Regional
Coal EIS

Mr. Charles Wilkie
Team Leader
Bureau of Land Management
951 Rancho Road
Casper, WY 82601

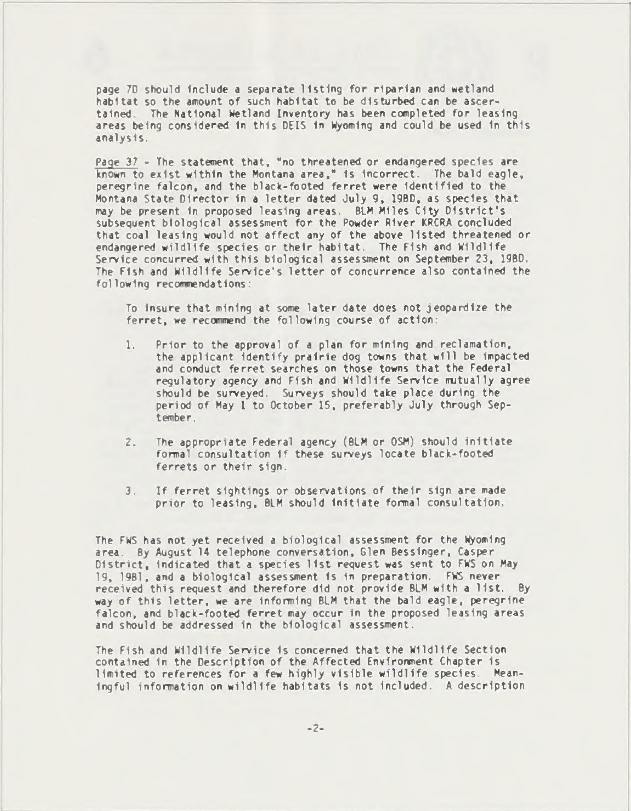
Dear Mr. Wilkie:

We have reviewed the Draft Powder River Regional Coal Environmental Impact Statement and have found several statements and/or sections that we feel should be clarified or improved.

Page 1 - The write-up for alternative #1 (No Action) is somewhat misleading in that the statement does not make clear that development under alternatives #2, #3, or #4 will occur in addition to development which will occur with alternative #1. Subsequent impacts occurring from leasing of the selected alternative will be in addition to those impacts occurring from alternative #1 (No Action).

Page 2 - We note that Shell's proposed Young's Creek Mine was inadvertently left out of Table 2-2. We assume that data for Shell's mine will be included in the Final Environmental Impact Statement (FEIS).

Page 33 - We do not agree with the conclusion that an assessment of the effects of proposed action on wetlands is not necessary in this DEIS. Wetlands and associated riparian habitats do occur within areas affected by alternatives discussed in the DEIS. The U.S. Fish and Wildlife Service in a December 19, 1980, letter identified as a part of the EIS scoping process issues which we thought were significant and should be analyzed in the Powder River Regional Coal Environmental Impact Statement. Wetlands and riparian habitats, among other habitats, were identified as being important habitats of concern. Executive Order #11990 requires consideration of practicable measures to minimize harm to wetlands. These measures should be described in the DEIS. Table 4-3 on



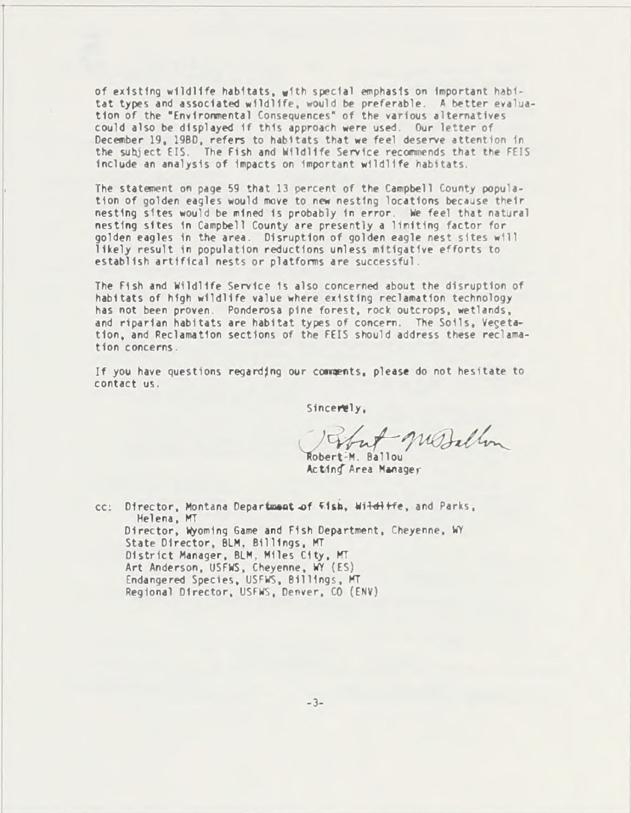
page 7D should include a separate listing for riparian and wetland habitat so the amount of such habitat to be disturbed can be ascertained. The National Wetland Inventory has been completed for leasing areas being considered in this DEIS in Wyoming and could be used in this analysis.

Page 37 - The statement that, "no threatened or endangered species are known to exist within the Montana area," is incorrect. The bald eagle, peregrine falcon, and the black-footed ferret were identified to the Montana State Director in a letter dated July 9, 198D, as species that may be present in proposed leasing areas. BLM Miles City District's subsequent biological assessment for the Powder River KRCRA concluded that coal leasing would not affect any of the above listed threatened or endangered wildlife species or their habitat. The Fish and Wildlife Service concurred with this biological assessment on September 23, 198D. The Fish and Wildlife Service's letter of concurrence also contained the following recommendations:

> To insure that mining at some later date does not jeopardize the ferret, we recommend the following course of action:
>
> 1. Prior to the approval of a plan for mining and reclamation, the applicant identify prairie dog towns that will be impacted and conduct ferret searches on those towns that the Federal regulatory agency and Fish and Wildlife Service mutually agree should be surveyed. Surveys should take place during the period of May 1 to October 15, preferably July through September.
>
> 2. The appropriate Federal agency (BLM or OSM) should initiate formal consultation if these surveys locate black-footed ferrets or their sign.
>
> 3. If ferret sightings or observations of their sign are made prior to leasing, BLM should initiate formal consultation.

The FWS has not yet received a biological assessment for the Wyoming area. By August 14 telephone conversation, Glen Bessinger, Casper District, indicated that a species list request was sent to FWS on May 19, 1981, and a biological assessment is in preparation. FWS never received this request and therefore did not provide BLM with a list. By way of this letter, we are informing BLM that the bald eagle, peregrine falcon, and black-footed ferret may occur in the proposed leasing areas and should be addressed in the biological assessment.

The Fish and Wildlife Service is concerned that the Wildlife Section contained in the Description of the Affected Environment Chapter is limited to references for a few highly visible wildlife species. Meaningful information on wildlife habitats is not included. A description



of existing wildlife habitats, with special emphasis on important habitat types and associated wildlife, would be preferable. A better evaluation of the "Environmental Consequences" of the various alternatives could also be displayed if this approach were used. Our letter of December 19, 198D, refers to habitats that we feel deserve attention in the subject EIS. The Fish and Wildlife Service recommends that the FEIS include an analysis of impacts on important wildlife habitats.

The statement on page 59 that 13 percent of the Campbell County population of golden eagles would move to new nesting locations because their nesting sites would be mined is probably in error. We feel that natural nesting sites in Campbell County are presently a limiting factor for golden eagles in the area. Disruption of golden eagle nest sites will likely result in population reductions unless mitigative efforts to establish artifical nests or platforms are successful.

The Fish and Wildlife Service is also concerned about the disruption of habitats of high wildlife value where existing reclamation technology has not been proven. Ponderosa pine forest, rock outcrops, wetlands, and riparian habitats are habitat types of concern. The Soils, Vegetation, and Reclamation sections of the FEIS should address these reclamation concerns.

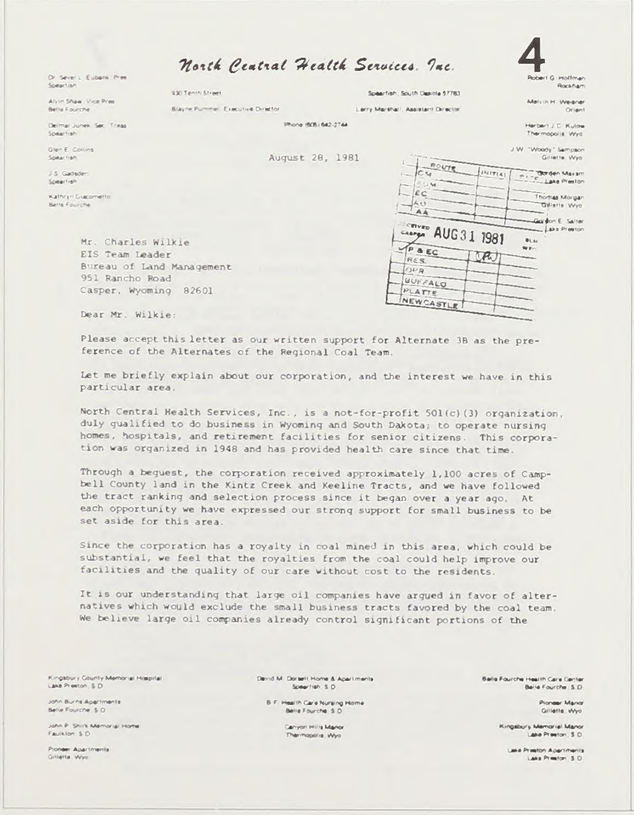
If you have questions regarding our comments, please do not hesitate to contact us.

Sincerely,

Robert M. Ballou

Robert M. Ballou
Acting Area Manager

cc: Director, Montana Department of Fish, Wildlife, and Parks,
Helena, MT
Director, Wyoming Game and Fish Department, Cheyenne, WY
State Director, BLM, Billings, MT
District Manager, BLM, Miles City, MT
Art Anderson, USFWS, Cheyenne, WY (ES)
Endangered Species, USFWS, Billings, MT
Regional Director, USFWS, Denver, CO (ENV)



4

North Central Health Services, Inc.

930 Tenth Street
Spearfish, South Dakota 57783
Blayne Pummel, Executive Director
Larry Marshall, Assistant Director
Phone (605) 642-2744

Dr. Sever L. Eubank, Pres.
Spearfish

Alvin Shaw, Vice Pres.
Belle Fourche

Delmar Junek, Sec.-Treas.
Spearfish

Glen E. Collins
Spearfish

J.S. Gadsden
Spearfish

Kathryn Giacometto
Belle Fourche

Robert G. Hoffman
Rockham

Melvin H. Weisner
Orient

Herbert J.C. Kulow
Thermopolis, Wyo

J.W. "Woody" Sampson
Gillette, Wyo

Gordon Maxam
Lake Preston

Thomas Morgan
Gillette, Wyo

Gordon E. Salter
Lake Preston

August 28, 1981

ROUTE INITIAL DATE
CM
SUM
EC
AO
AA

RECEIVED CASPER AUG 31 1981 BLM WYO
P & EC (RW)
RES.
OPR
BUFFALO
PLATTE
NEWCASTLE

Mr. Charles Wilkie
EIS Team Leader
Bureau of Land Management
951 Rancho Road
Casper, Wyoming 82601

Dear Mr. Wilkie:

Please accept this letter as our written support for Alternate 3B as the preference of the Alternates of the Regional Coal Team.

Let me briefly explain about our corporation, and the interest we have in this particular area.

North Central Health Services, Inc., is a not-for-profit 501(c)(3) organization, duly qualified to do business in Wyoming and South Dakota; to operate nursing homes, hospitals, and retirement facilities for senior citizens. This corporation was organized in 1948 and has provided health care since that time.

Through a bequest, the corporation received approximately 1,100 acres of Campbell County land in the Kintz Creek and Keeline Tracts, and we have followed the tract ranking and selection process since it began over a year ago. At each opportunity we have expressed our strong support for small business to be set aside for this area.

Since the corporation has a royalty in coal mined in this area, which could be substantial, we feel that the royalties from the coal could help improve our facilities and the quality of our care without cost to the residents.

It is our understanding that large oil companies have argued in favor of alternatives which would exclude the small business tracts favored by the coal team. We believe large oil companies already control significant portions of the

Kingsbury County Memorial Hospital
Lake Preston, S.D.

John Burns Apartments
Belle Fourche, S.D.

John P. Shirk Memorial Home
Faulkton, S.D.

Pioneer Apartments
Gillette, Wyo

David M. Dorsett Home & Apartments
Spearfish, S.D.

B.F. Health Care Nursing Home
Belle Fourche, S.D.

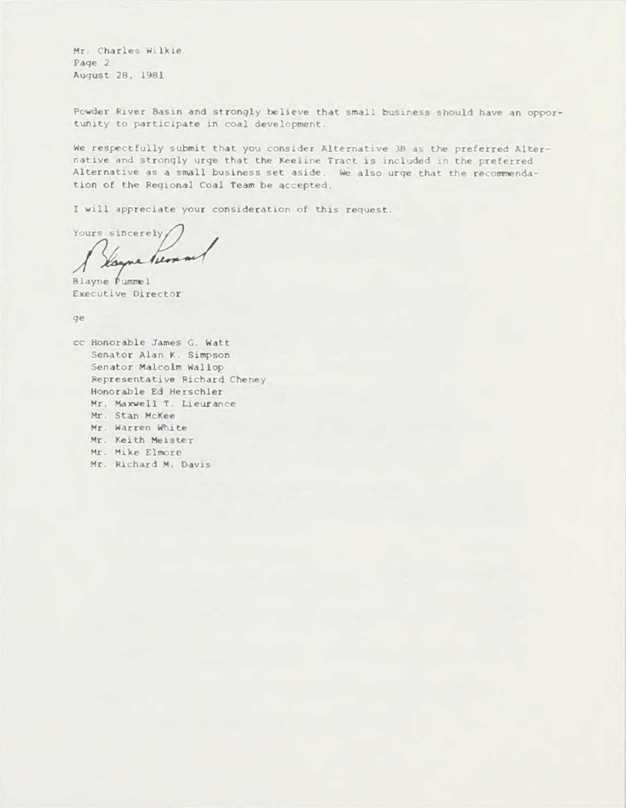
Canyon Hills Manor
Thermopolis, Wyo

Belle Fourche Health Care Center
Belle Fourche, S.D.

Pioneer Manor
Gillette, Wyo

Kingsbury Memorial Manor
Lake Preston, S.D.

Lake Preston Apartments
Lake Preston, S.D.



Mr. Charles Wilkie
Page 2
August 28, 1981

Powder River Basin and strongly believe that small business should have an opportunity to participate in coal development.

We respectfully submit that you consider Alternative 3B as the preferred Alternative and strongly urge that the Keeline Tract is included in the preferred Alternative as a small business set aside. We also urge that the recommendation of the Regional Coal Team be accepted.

I will appreciate your consideration of this request.

Yours sincerely,

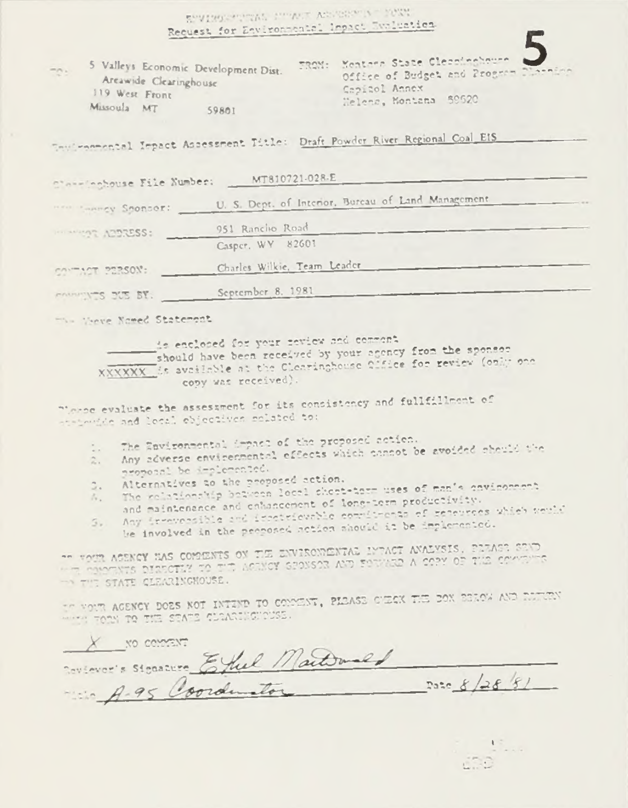
Blayne Pummel

Blayne Pummel
Executive Director

ge

cc Honorable James G. Watt
Senator Alan K. Simpson
Senator Malcolm Wallop
Representative Richard Cheney
Honorable Ed Herschler
Mr. Maxwell T. Lieurance
Mr. Stan McKee
Mr. Warren White
Mr. Keith Meister
Mr. Mike Elmore
Mr. Richard M. Davis

5



ENVIRONMENTAL IMPACT ASSESSMENT FORM
Request for Environmental Impact Evaluation

TO: 5 Valleys Economic Development Dist.
Areawide Clearinghouse
119 West Front
Missoula MT 59801

FROM: Montana State Clearinghouse
Office of Budget and Program Planning
Capitol Annex
Helena, Montana 59620

Environmental Impact Assessment Title: Draft Powder River Regional Coal EIS

Clearinghouse File Number: MT810721-028-E

[illegible] Agency Sponsor: U. S. Dept. of Interior, Bureau of Land Management

SPONSOR ADDRESS: 951 Rancho Road
Casper, WY 82601

CONTACT PERSON: Charles Wilkie, Team Leader

COMMENTS DUE BY: September 8, 1981

The Above Named Statement

______ is enclosed for your review and comment
______ should have been received by your agency from the sponsor
XXXXXX is available at the Clearinghouse Office for review (only one copy was received).

Please evaluate the assessment for its consistency and fullfillment of statewide and local objectives related to:

1. The Environmental impact of the proposed action.
2. Any adverse environmental effects which cannot be avoided should the proposal be implemented.
3. Alternatives to the proposed action.
4. The relationship between local short-term uses of man's environment and maintenance and enhancement of long-term productivity.
5. Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

IF YOUR AGENCY HAS COMMENTS ON THE ENVIRONMENTAL IMPACT ANALYSIS, PLEASE SEND THE COMMENTS DIRECTLY TO THE AGENCY SPONSOR AND FORWARD A COPY OF THE COMMENTS TO THE STATE CLEARINGHOUSE.

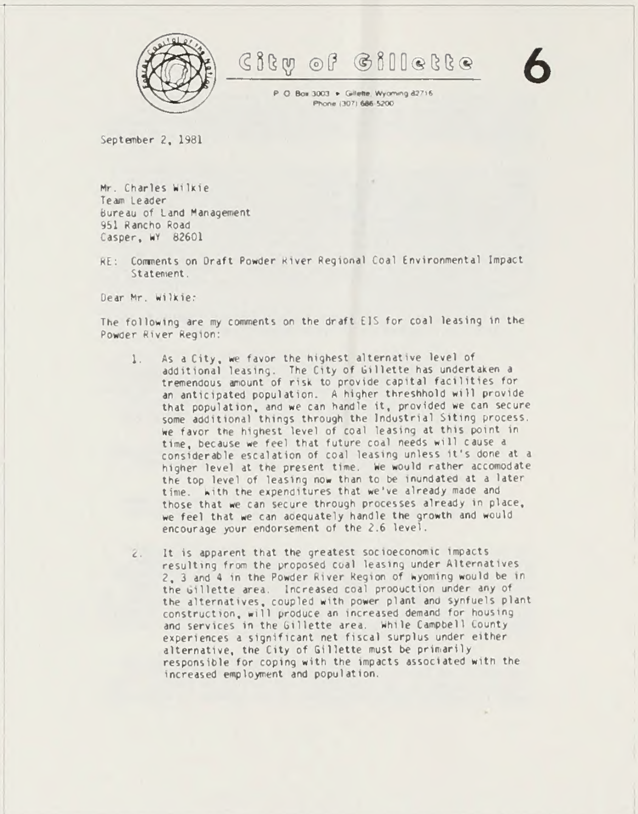
IF YOUR AGENCY DOES NOT INTEND TO COMMENT, PLEASE CHECK THE BOX BELOW AND RETURN THIS FORM TO THE STATE CLEARINGHOUSE.

X NO COMMENT

Reviewer's Signature Ethel MacDonald

Title A-95 Coordinator Date 8/28/81

6



City of Gillette
P. O. Box 3003 • Gillette, Wyoming 82716
Phone (307) 686-5200

September 2, 1981

Mr. Charles Wilkie
Team Leader
Bureau of Land Management
951 Rancho Road
Casper, WY 82601

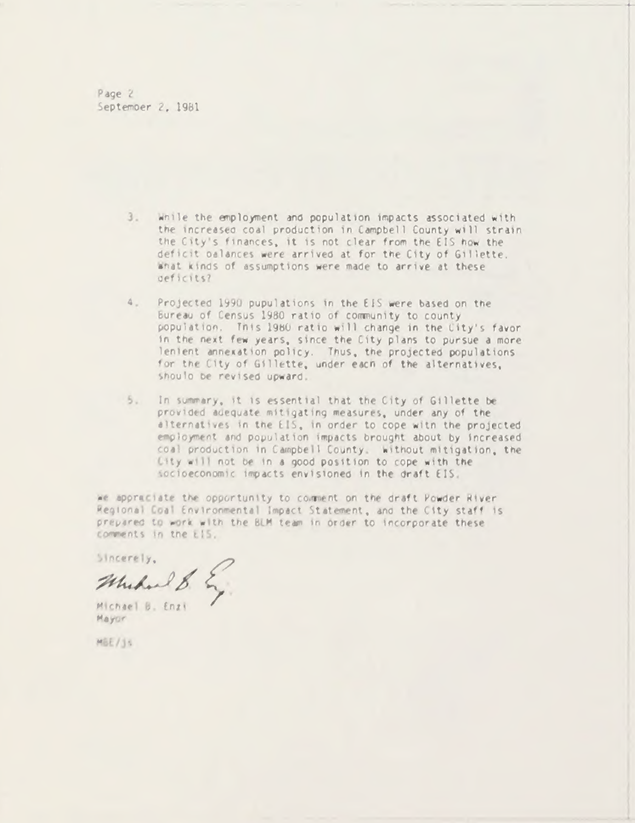
RE: Comments on Draft Powder River Regional Coal Environmental Impact Statement.

Dear Mr. Wilkie:

The following are my comments on the draft EIS for coal leasing in the Powder River Region:

1. As a City, we favor the highest alternative level of additional leasing. The City of Gillette has undertaken a tremendous amount of risk to provide capital facilities for an anticipated population. A higher threshhold will provide that population, and we can handle it, provided we can secure some additional things through the Industrial Siting process. We favor the highest level of coal leasing at this point in time, because we feel that future coal needs will cause a considerable escalation of coal leasing unless it's done at a higher level at the present time. We would rather accomodate the top level of leasing now than to be inundated at a later time. With the expenditures that we've already made and those that we can secure through processes already in place, we feel that we can adequately handle the growth and would encourage your endorsement of the 2.6 level.

2. It is apparent that the greatest socioeconomic impacts resulting from the proposed coal leasing under Alternatives 2, 3 and 4 in the Powder River Region of Wyoming would be in the Gillette area. Increased coal production under any of the alternatives, coupled with power plant and synfuels plant construction, will produce an increased demand for housing and services in the Gillette area. While Campbell County experiences a significant net fiscal surplus under either alternative, the City of Gillette must be primarily responsible for coping with the impacts associated with the increased employment and population.



Page 2
September 2, 1981

3. While the employment and population impacts associated with the increased coal production in Campbell County will strain the City's finances, it is not clear from the EIS how the deficit balances were arrived at for the City of Gillette. What kinds of assumptions were made to arrive at these deficits?

4. Projected 1990 populations in the EIS were based on the Bureau of Census 1980 ratio of community to county population. This 1980 ratio will change in the next few years, since the City plans to pursue a more lenient annexation policy. Thus, the projected populations for the City of Gillette, under each of the alternatives, should be revised upward.

5. In summary, it is essential that the City of Gillette be provided adequate mitigating measures, under any of the alternatives in the EIS, in order to cope with the projected employment and population impacts brought about by increased coal production in Campbell County. Without mitigation, the City will not be in a good position to cope with the socioeconomic impacts envisioned in the draft EIS.

We appreciate the opportunity to comment on the draft Powder River Regional Coal Environmental Impact Statement, and the City staff is prepared to work with the BLM team in order to incorporate these comments in the EIS.

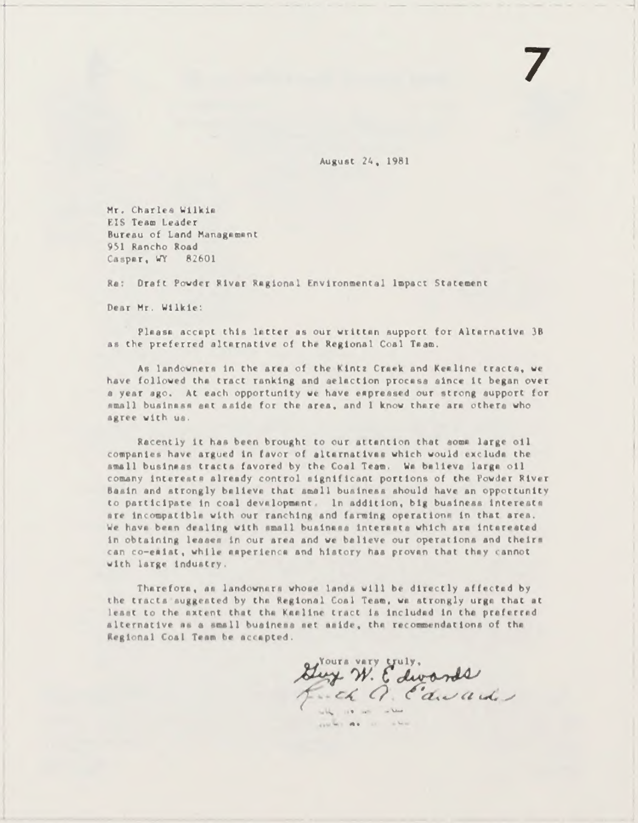
Sincerely,

Michael B. Enzi

Michael B. Enzi
Mayor

MBE/js

7



August 24, 1981

Mr. Charles Wilkie
EIS Team Leader
Bureau of Land Management
951 Rancho Road
Casper, WY 82601

Re: Draft Powder River Regional Environmental Impact Statement

Dear Mr. Wilkie:

Please accept this letter as our written support for Alternative 3B as the preferred alternative of the Regional Coal Team.

As landowners in the area of the Kintz Creek and Keeline tracts, we have followed the tract ranking and selection process since it began over a year ago. At each opportunity we have expressed our strong support for small business set aside for the area, and I know there are others who agree with us.

Recently it has been brought to our attention that some large oil companies have argued in favor of alternatives which would exclude the small business tracts favored by the Coal Team. We believe large oil comany interests already control significant portions of the Powder River Basin and strongly believe that small business should have an opportunity to participate in coal development. In addition, big business interests are incompatible with our ranching and farming operations in that area. We have been dealing with small business interests which are interested in obtaining leases in our area and we believe our operations and theirs can co-exist, while experience and history has proven that they cannot with large industry.

Therefore, as landowners whose lands will be directly affected by the tracts suggested by the Regional Coal Team, we strongly urge that at least to the extent that the Keeline tract is included in the preferred alternative as a small business set aside, the recommendations of the Regional Coal Team be accepted.

Yours very truly,
Guy W. Edwards
Ruth A. Edwards

8

August 28, 1981

EIS Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, Wyoming 82601

Dear Sir:

The following are my comments upon the Draft Powder River Regional Coal Impact Statement:

In my opinion the DEIS inadequately concentrated on the significant issues and impacts related to rapid growth of the counties and towns. Your approach does not sharply define any option on any issue. "The issue of primary concern is the impact of coal mine development and population increases to communities" (statement from Summary). That text goes on to: "many other resource impacts are presented" and, about those "other" than that of the primary concern, "Many other resource impacts are presented, but in nearly every case, they are either insignificant or are mitigated by existing regulations." Mitigation of "population increases to communities" is not specified nor sharply defined nor are any mitigation measures adopted to offset this impact.

About Alternative 3, the preferred alternative, you state: "This alternative offers the most favorable ratio of coal produced to environmental impacts generated." As the DEIS text is developed, I see no logical background furthering the "most favorable ratio" discussion.

While Alternatives 2, 3, and 4 are described with coal tonnage, number of tracts, and number of surface acres disturbed, these factors are not described for Alternative 1 (no action) yet you offer the conclusion that the No Action Alternative "would have impacts considerable greater than any of the other alternatives in this EIS." The Summary does not prepare the reader for the conclusion because the general text does not prepare for the Summary.

The general conclusion that "all the alternatives, including the No-Action, would further commit the region to a single (emphasis added) economic base (coal)" is a conclusion without full vision.

Are all other economic bases trending to total disappearance?

Are you stating that the land use of reclaimed acres is for no-use; never?

On page 7, you refer to oil, gas and power plants;

Are these within the economic base?

The sections of the Summary have general description, general conclusions and highlights. I suggest that there should be one on adopted Mitigation Measures. BLM/DOI Regional Coal Team endorsed an Impact Response Strategy in the June meeting at Casper. The Strategy provides for the implementation of mitigation measures by participation of the full range of federal, state and local governments; this follows NEPA. By not adopting mitigation measures, BLM/DOI, in my opinion, are deflecting the purpose of EIS and the strength of NEPA. Mitigation measures can not be adopted from this DEIS because these measures are not set forth in this DEIS. Thus, the DEIS is inadequate.

The Highlights section of the Summary would be useful as information if it was re-written to reflect the highlighted information by each alternative. Then, perhaps, your text could support the preferred alternative from the comparison. It should comply with CEQ regulations by providing emphasis which sharply defines the options and provides a clear basis for choice by the decision-maker and the public.

I am not going to take it on one by one but allow me to wonder what was intended by the vagueness of the text, for you have chosen to be vague rather than to "sharply define" these issues.

My perception that the text is vague is supported by a reading, for example, of the text for Geology and other Minerals which states,

> "Coal, oil and gas, and uranium in economic quantities exist within the region. Coal production would not generally interfer with extraction of other energy minerals due to land-use planning constraints that minimize resource development conflicts."

or Cultural Resources:

> "Federal and state regulations protect these resources. Historic and architectural resources on private lands may not be protected unless steps are taken by local governments and private citizens."

or Soils, Vegetation, and Reclamation:

> "Soils in the area are often shallow, although slopes are generally gradual on a rolling type terrain. Reclamation success has shown to be good, although some areas could require more intensive and costly management."

I claim it is vague to report, as you do in Water Resources, that 312,000 acres of shallow local aquifers would be lost.

Is this acre-feet?

What use is made now?

How extensive is the use?

Is it all lost by a day-certain?

Who has the water rights now?

How is the water right preserved? by whom?

I claim it is vague to report no specific affect of Alternative 1, 2, 3 and 4 for the geology piece; only the preferred Alternative in Water Resources; none of the Alternatives in Air Quality; none in Soils; none in Wildlife; none in Cultural Resources; only the preferred Alternatives in Land Use; Alternative 1 in Recreation; the preferred in Transportation; and none are referred to in Sociology and Economics.

I could go back over these same pieces and support my perception of "vague" because you are not consistent in the specifics for region, areas, Wyoming, Montana across each piece; in some pieces you use one description, others, none, and in some pieces incompletely, certain areas of a state, then regionally.

Most of this is so vague that it misdirects the reader's attention, serves the reader badly and is inadequately specific. The Summary, in its present form, does not enhance the DEIS. Rather it deflects the purpose of the process; that is: a clear basis for choice. Yours is a text which could have been composed without all the work you did.

Now there is a question on my mind and I may as well take this opportunity to ask it.

How many dollars have been spent by DOI on this Powder River Basin process from the day you were directed to start through this DEIS?

The issues and areas of concern developed from the scoping process have me puzzled. I need clarification.

This new scoping process - is it to elicit the issues and areas of public concern?
is it used to provide for emphasis and concentration, by BLM workers, upon what the public stated?
is it used to direct the BLM work to these concerns of the public?
is this why DEIS can be around 150 pages?

You state that the majority of concerns expressed through the scoping process focused on impacts to:
water resources
air quality
socio-economics
transportation
Some concern was expressed, you state, on reclamation and the increase in jobs.

As I had comprehended the new scoping process the answer to my questions immediately above should be "yes." Therefore every editing effort was made to comply with concerns of the public. You did this scoping in 1980, December. Tract ranking factors were considered by the RCT in early 1981 for ranking. These are not a reflection of the scoping process.

Why aren't the track ranking factors the same as the concerns "scoped"?

There are several details which are in error or are misleading at a minimum. For one, Table 1-3. Footnote: "Tracts selected for the 1982 lease sale" could be more accurate as "Tracts selected for further consideration for the 1982 coal lease target and sale." Unless you mean it, for Alternative 4.

You have a "typo", page 41, Economics, Montana. "Table 3-6 should read "Table 3-7". All other composition seems flawless.

In Chapter 2, Alternative 1,

Why do you allude to the DOE high production goal here?

What production goal does Alternative 1 meet?

Under Water Resources, it is misdirecting to change the units from acre-feet to acres (of aquifers).

You state ". . . 275,000 acres of aquifers would be removed by existing and projected mining operations."

What acreage of that number is for existing operation?

Why use "would be" for existing operations?

Given EPA regulations, how can you state that sewage effluent will increase 0.07 percent in the Tongue and North Platte rivers by 1990?

Whose effluent is this?

Humans? Animals? Mineral?

Why do you use year 1990 for coal production, and for sewage effluent, but year 1995 for air quality?

How many tons of particulates by 1990?

For some of these pieces of Alternative 1, you use "per year", why not for ground water and reclamation pieces?

This DEIS is for comparisons; hard to compare when the units used change from piece to piece.

The proposed T R Railroad would have an additional affect on train traffic on the BN lines leaving the region.

Alternative 1, No Action, is shown to affect Rosebud and Powder River Counties.

Is Sheridan unaffected under this Alternative 1?

Page 5

Under "No Action" please state which mine/mines create this level of impact, by year. Surely if you can calculate acre-feet of water per year, you can and should calculate community services and facilities per year as well as housing.

> Under "No Action" do you still assume 40% of the socio-economic impacts to be in Powder River County?
>
> At which alternative is the "40%" operative?

Under "No Action", you forecast the need for Rosebud County housing to number 1,813. You project Ashland population to 800 in 1990. In 1981 Ashland has about 260 people.

> What is the number of houses there in 1981?
>
> Is it less than 50?
>
> Upon what population increase do you base the need for 1,813 additional housing units under No Action?
>
> If Ashland increases by 540 people, and even assuming there is one person per added house, where are the other 1,273 units (at one per D.U.) forecast to be needed?

An increase from 260 to 800 persons would exceed your 4% projected increase in municipal water use.

On Alternative 2:
The coal related employment in 2A for Montana is reported to reach about 6300 by 1990. In 2B it is 5500; the difference being that Ashland Cook Mountain Tract would be dropped. The difference in jobs is 800. In the earlier SSA's the employment number for Ashland-Coalwood was 363.

> What is the difference in job numbers due to?

In 2C you add on Cook Mountain (with Coal Creek this is the same as Ashland Coalwood) and state the job number for Montana to be 5800; up 300 from 2B but not the same as 2A. Both 2A and 2C have equal tonnage. This set of numbers is very important. Ashland is projected to be 800 people by 1990. This 540 increase is 60% of the growth; 40% is projected for Powder River County. In 1981 others calculate the number of mining operators for the six major mines to be 1445 (see DEIS page 41).

> What is the basis for the employment figures used here?
> Since you stated that the development of coal will commit the region to a single economic base (coal) how does this number of jobs, either yours or the 1691 figure, compare with the number of Montanans in agriculture, government, and the other sectors?
>
> How many new jobs are forecast in Montana sectors other than mining?

Page 6

For comparison, it is important to have baseline coal employment for Alternative 1.

> Is it 1445?

It should be viewed as better information to the public and decision-makers if the text consistently refers to either the region or, preferably for clarity, to Montana and to Wyoming. For example, the number of wells destroyed, acres of shallow aquifers removed should be reported by county, if available, by state certainly. You do do this for Surface Water, for instance.

Alternative 2 analysis is based on 2C. This sub-alternative reports 5800 for the Montana coal related employment. It must be emphasized that the number of added jobs needs to be calculated accurately.

> If it is correct that the present number for Montana is approximately 1450, are there to be 4350 new jobs in the 3 new tracts (Cook Mountain, Coal Creek, Northwest Otter Creek)?

Under No Action, 1813 added housing units are projected for Rosebud County. Under 2C, 750 units are projected for Rosebud and 500 units for Powder River County. This seems to be 1250 units.

> Can I assume this is for 1250 new miners?

With 750 new dwellings in Rosebud, you calculate 1700 added people or 2.27 per dwelling.

> Can you estimate the population increase in Powder River County and in Broadus?

This is important in order to review the piece on Community Services and Facilities.

If I can understand what you are writing, the additional housing requirements for 2-C are the same for Alternative 3. This is said for added population and for fiscal impacts. Since 2-C has a job number of 5800 and Alternative 3, 3-A a job number of 6300, this, for me, needs further clarification for my use as I compare Alternatives.

> How does 3-A allow for free competition and choice among the tracts of Table 1-3?
> Are you not required to "put up" 3 to 4 times the number of tracts required to meet DOE annual production to enhance free competition for the tracts?

For Alternative 4, as presented in earlier Site Specific Analysis (SSA) the 4 new coal tracts in Montana reported a peak work production force of 360-400 jobs per mine.

> Clarify how your employment figure of 9100 was arrived at.
> Given your stated requirement for additional dwellings of 2500, are there 2500 new Montana jobs or 9100 miners for the existing 1450 or 7650 new jobs?

Page 7

Since you did not report the coal production employee number for Alternative 1, the report of employment numbers for the other Alternatives are not easy for me to accept. You should report that Broadus, under this Alternative, would anticipate 1800 added population by 1990 and Powder River County, 454 added persons.

Should your employment figures be reconsidered, it follows that other changes dependent on such numbers will be changed. See DEIS page 41.

Again, no mitigation measures for any impact of any alternative has been adopted.

> Why not?

Community and social economic impacts are a major area and issue of concern.

In Table 2-11, Transportation, for average interruption etc. you use only 5 mph. However, in Table 3-4 you also report at 20 mph.

> Can you reference Table 3-4?

In the Table 2-1, Sociology,the columns of numbers do not match numbers in descriptive text.

> Which are correct?
>
> How did you reach these numbers for services?

In Table 2-1, Economics, please give the source, revenue resources, the calculations; explain why Broadus population is excluded here.

For the purpose of my review, I'm going to assume the use of the Coaltown model for the development of Table 2-3 was your perogative as Team Leader. I'm going to assume it is correct. Therefore, the negative balances as shown is recognition by the lead agency that an adverse fiscal impact will result from federal action.

> Where are the adopted mitigation measures?

In Chapter 3, on page 34 your comment that Broadus water supply is adequate presently is inaccurate. This reflects the level of respect you have for local government cooperators. You can check the 1980 census to correct the comment, page 41, on the race which inhabits Ashland.

On page 41, coal employment for 1980 is reported to be 1445 in the region. This could be a useful number for you to use (my earlier comment).

The 1980 Census shows a "block" count for Ashland and shows the number of dwellings specifically in Ashland community. You do not need to use the enumeration district named "Ashland" for this Table 3-6.

Page 8

Table 3-7 has a title which should be revised. The display is not showing the existing economic environment.

> On page 62, Noise, are you stating that Broadus is within the 55 dBA zone of railroad traffic?

If so, consider correction.

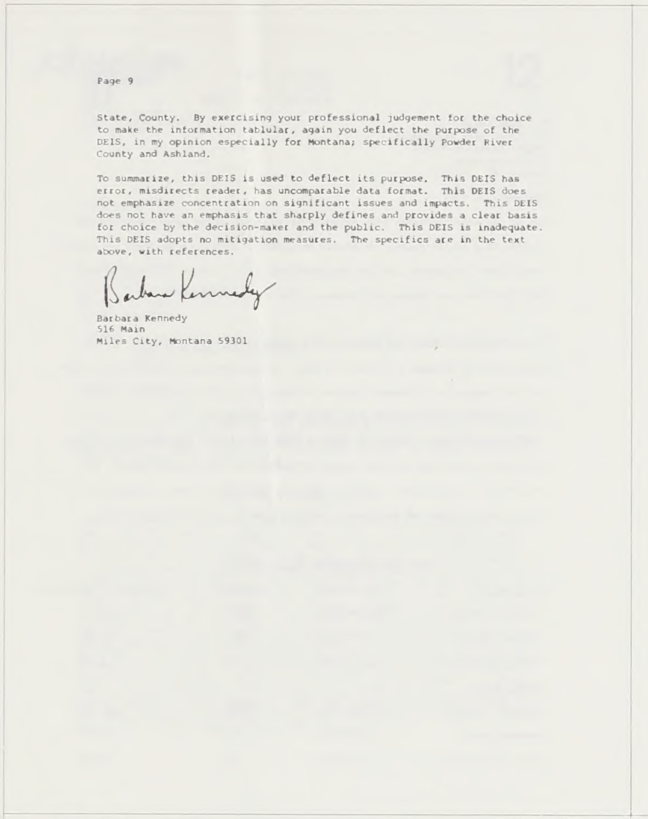
> On page 62, Sociology, why is the potential for conflict specific between newcomers and Native Americans at Ashland?
> Are you stating that only the Native Americans would feel their lifestyle and community as threatened by newcomers; or is it threatening to newcomers; or that theirs is so ideal as to use "threatened" while long-time residents (non-Indian?) may just "feel a loss"?
> Are you implying that non-Indians will reside on the reservation?
> What will be the affect upon the long-time residents and the Native Americans who enter the new work force, sharing the work-load with newcomers?
> Are they going to go to work "lost", "threatened" or "threatening"?
> Are social adjustments in Montana less probable than those in Gillette which would "continue apace"?

The information on page 15, Sociology, for Powder River County under No Action is inconsistent with that on page 63, Economics, Powder River County, where in you state "No Action, county is static."

In this same piece, page 63, you state that increases in expected public expenditures during construction would outweigh any possible increases in revenues to the county. This is true for revenue but not for Coal Board Impact funding.

On page 64, you state that Ashland has a 1980 population of 569. This is another error. The Miles City BLM District Office was told; was shown, prior to DEIS draft..

Referring to coal employment, numbers on page 41 for Big Horn and Rosebud counties is inconsistent with Table 4-10, page 77, baseline. Please explain how these figures are reflected in your coal production employment numbers used in 2-A, 2-B, 2-C, 3 and 4 for Powder River County and see also the SSA's on Ashland-Coalwood and Northwest Otter Creek, Southwest Otter Creek and Ashland Decker-Birney Tracts for estimated peak coal production employment numbers. From the scoping process, you know there is interest in new jobs and the beneficial aspects of mining more coal, by job description and wage scale (page 8). For Montana, this DEIS addresses new jobs inaccurately; beneficial aspects of mining more coal are inadequately addressed. One benefit can be found in Table G-1, page G-2. There is a column headed "gain to agricultural landowner" which can be compared with the column headed "Loss in Agricultural Sales". This particular Table presents figures which could be included in descriptive text under Economics for each Alternative, for each



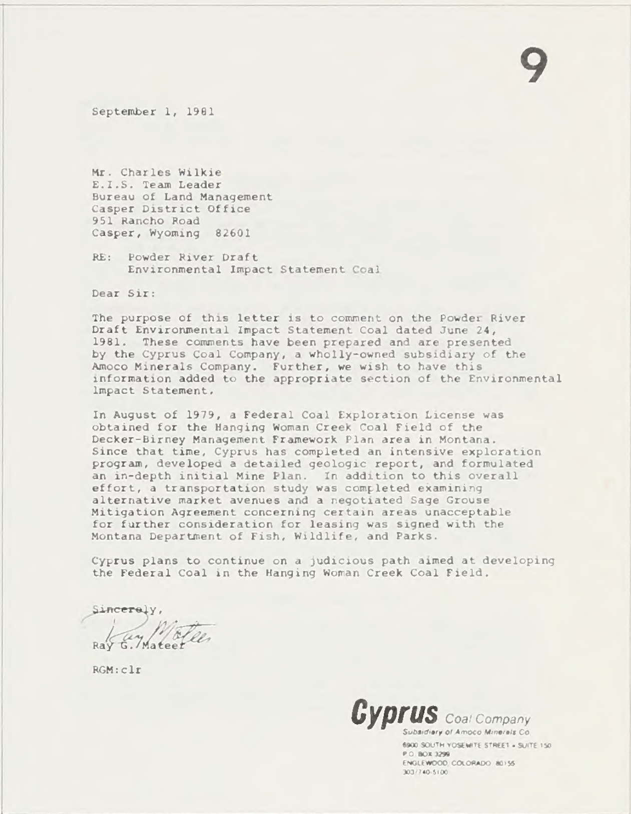
Page 9

State, County. By exercising your professional judgement for the choice to make the information tablular, again you deflect the purpose of the DEIS, in my opinion especially for Montana; specifically Powder River County and Ashland.

To summarize, this DEIS is used to deflect its purpose. This DEIS has error, misdirects reader, has uncomparable data format. This DEIS does not emphasize concentration on significant issues and impacts. This DEIS does not have an emphasis that sharply defines and provides a clear basis for choice by the decision-maker and the public. This DEIS is inadequate. This DEIS adopts no mitigation measures. The specifics are in the text above, with references.

Barbara Kennedy

Barbara Kennedy
516 Main
Miles City, Montana 59301



9

September 1, 1981

Mr. Charles Wilkie
E.I.S. Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, Wyoming 82601

RE: Powder River Draft
Environmental Impact Statement Coal

Dear Sir:

The purpose of this letter is to comment on the Powder River Draft Environmental Impact Statement Coal dated June 24, 1981. These comments have been prepared and are presented by the Cyprus Coal Company, a wholly-owned subsidiary of the Amoco Minerals Company. Further, we wish to have this information added to the appropriate section of the Environmental Impact Statement.

In August of 1979, a Federal Coal Exploration License was obtained for the Hanging Woman Creek Coal Field of the Decker-Birney Management Framework Plan area in Montana. Since that time, Cyprus has completed an intensive exploration program, developed a detailed geologic report, and formulated an in-depth initial Mine Plan. In addition to this overall effort, a transportation study was completed examining alternative market avenues and a negotiated Sage Grouse Mitigation Agreement concerning certain areas unacceptable for further consideration for leasing was signed with the Montana Department of Fish, Wildlife, and Parks.

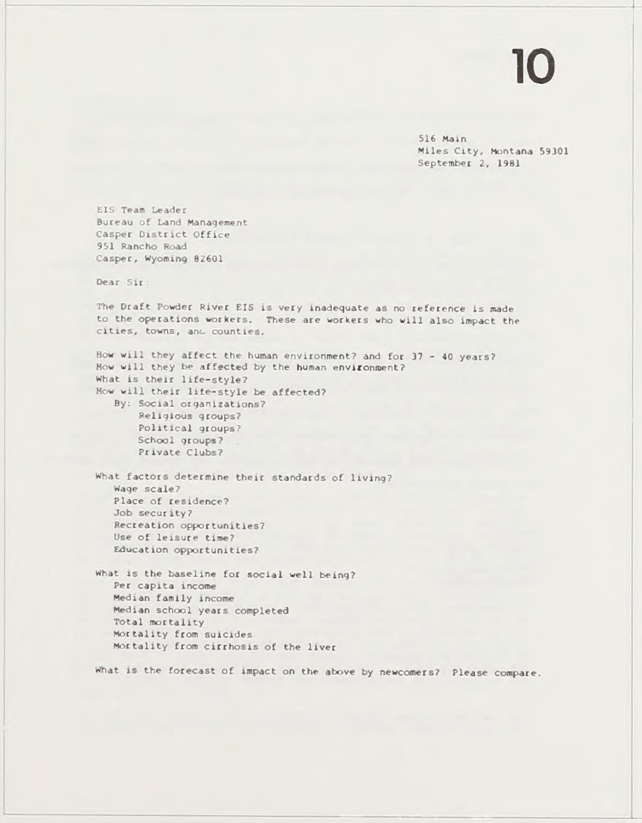
Cyprus plans to continue on a judicious path aimed at developing the Federal Coal in the Hanging Woman Creek Coal Field.

Sincerely,

Ray Mateer
Ray G. Mateer

RGM:clr

Cyprus Coal Company
Subsidiary of Amoco Minerals Co.
6900 SOUTH YOSEMITE STREET • SUITE 150
P.O. BOX 3299
ENGLEWOOD, COLORADO 80155
303/740-5100



10

516 Main
Miles City, Montana 59301
September 2, 1981

EIS Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, Wyoming 82601

Dear Sir:

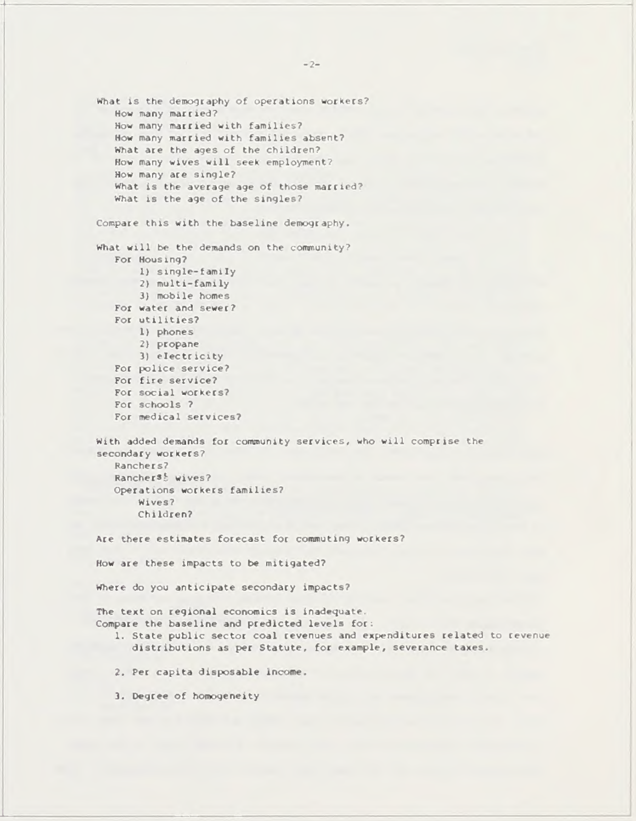
The Draft Powder River EIS is very inadequate as no reference is made to the operations workers. These are workers who will also impact the cities, towns, and counties.

How will they affect the human environment? and for 37 - 40 years?
How will they be affected by the human environment?
What is their life-style?
How will their life-style be affected?
By: Social organizations?
Religious groups?
Political groups?
School groups?
Private Clubs?

What factors determine their standards of living?
Wage scale?
Place of residence?
Job security?
Recreation opportunities?
Use of leisure time?
Education opportunities?

What is the baseline for social well being?
Per capita income
Median family income
Median school years completed
Total mortality
Mortality from suicides
Mortality from cirrhosis of the liver

What is the forecast of impact on the above by newcomers? Please compare.



-2-

What is the demography of operations workers?
How many married?
How many married with families?
How many married with families absent?
What are the ages of the children?
How many wives will seek employment?
How many are single?
What is the average age of those married?
What is the age of the singles?

Compare this with the baseline demography.

What will be the demands on the community?
For Housing?
1) single-family
2) multi-family
3) mobile homes
For water and sewer?
For utilities?
1) phones
2) propane
3) electricity
For police service?
For fire service?
For social workers?
For schools ?
For medical services?

With added demands for community services, who will comprise the secondary workers?
Ranchers?
Ranchers' wives?
Operations workers families?
Wives?
Children?

Are there estimates forecast for commuting workers?

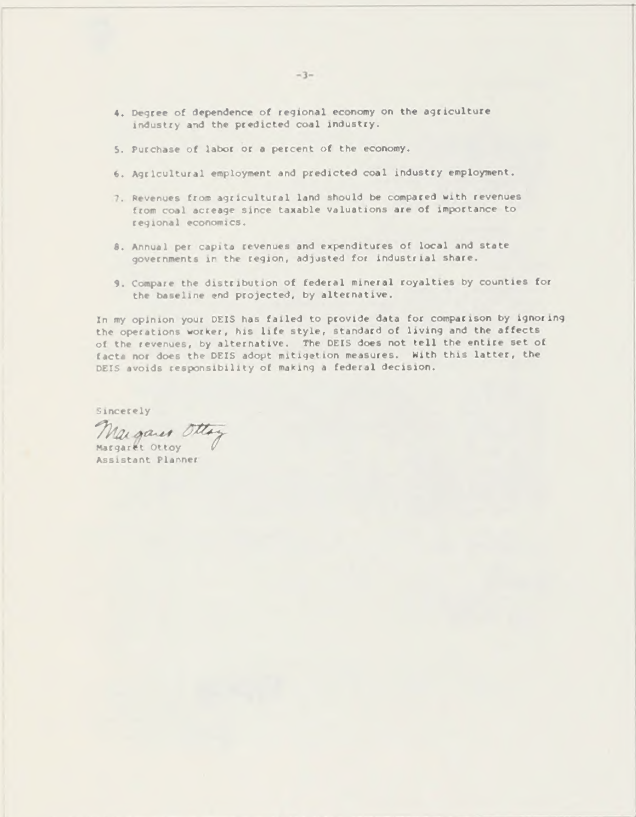
How are these impacts to be mitigated?

Where do you anticipate secondary impacts?

The text on regional economics is inadequate.
Compare the baseline and predicted levels for:
1. State public sector coal revenues and expenditures related to revenue distributions as per Statute, for example, severance taxes.

2. Per capita disposable income.

3. Degree of homogeneity



-3-

4. Degree of dependence of regional economy on the agriculture industry and the predicted coal industry.

5. Purchase of labor or a percent of the economy.

6. Agricultural employment and predicted coal industry employment.

7. Revenues from agricultural land should be compared with revenues from coal acreage since taxable valuations are of importance to regional economics.

8. Annual per capita revenues and expenditures of local and state governments in the region, adjusted for industrial share.

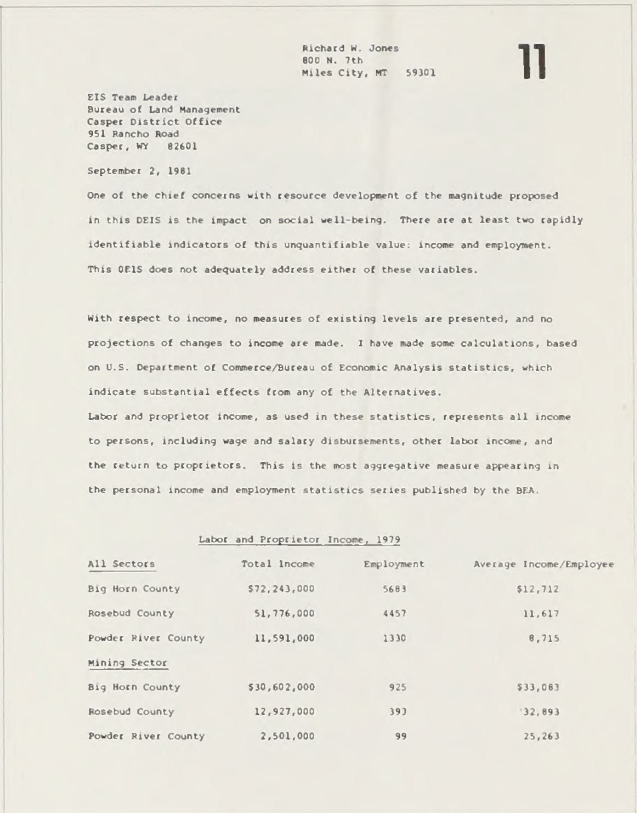
9. Compare the distribution of federal mineral royalties by counties for the baseline end projected, by alternative.

In my opinion your DEIS has failed to provide data for comparison by ignoring the operations worker, his life style, standard of living and the affects of the revenues, by alternative. The DEIS does not tell the entire set of facts nor does the DEIS adopt mitigation measures. With this latter, the DEIS avoids responsibility of making a federal decision.

Sincerely

Margaret Ottoy

Margaret Ottoy
Assistant Planner



Richard W. Jones
800 N. 7th
Miles City, MT 59301

11

EIS Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, WY 82601

September 2, 1981

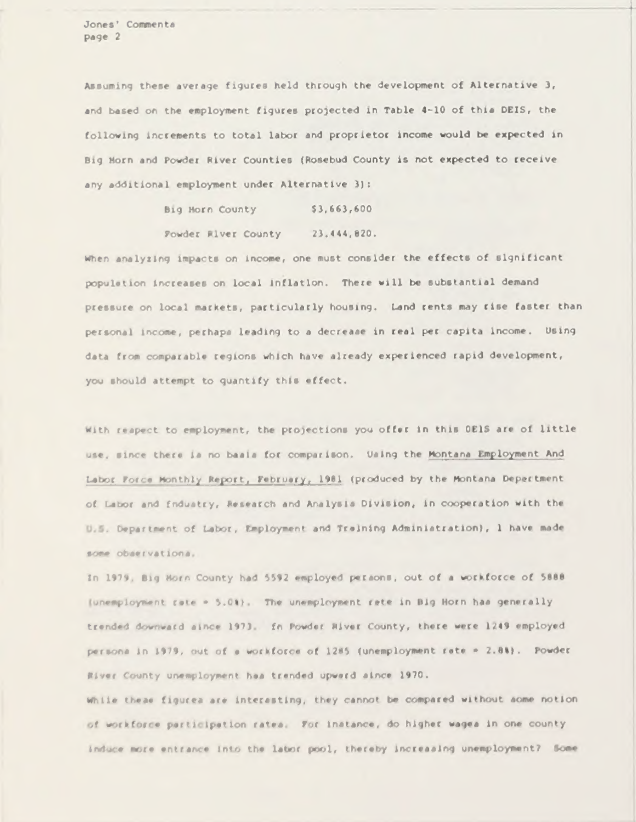
One of the chief concerns with resource development of the magnitude proposed in this DEIS is the impact on social well-being. There are at least two rapidly identifiable indicators of this unquantifiable value: income and employment. This DEIS does not adequately address either of these variables.

With respect to income, no measures of existing levels are presented, and no projections of changes to income are made. I have made some calculations, based on U.S. Department of Commerce/Bureau of Economic Analysis statistics, which indicate substantial effects from any of the Alternatives.

Labor and proprietor income, as used in these statistics, represents all income to persons, including wage and salary disbursements, other labor income, and the return to proprietors. This is the most aggregative measure appearing in the personal income and employment statistics series published by the BEA.

Labor and Proprietor Income, 1979

All Sectors	Total Income	Employment	Average Income/Employee
Big Horn County	$72,243,000	5683	$12,712
Rosebud County	51,776,000	4457	11,617
Powder River County	11,591,000	1330	8,715
Mining Sector			
Big Horn County	$30,602,000	925	$33,083
Rosebud County	12,927,000	393	32,893
Powder River County	2,501,000	99	25,263



Jones' Comments
page 2

Assuming these average figures held through the development of Alternative 3, and based on the employment figures projected in Table 4-10 of this DEIS, the following increments to total labor and proprietor income would be expected in Big Horn and Powder River Counties (Rosebud County is not expected to receive any additional employment under Alternative 3):

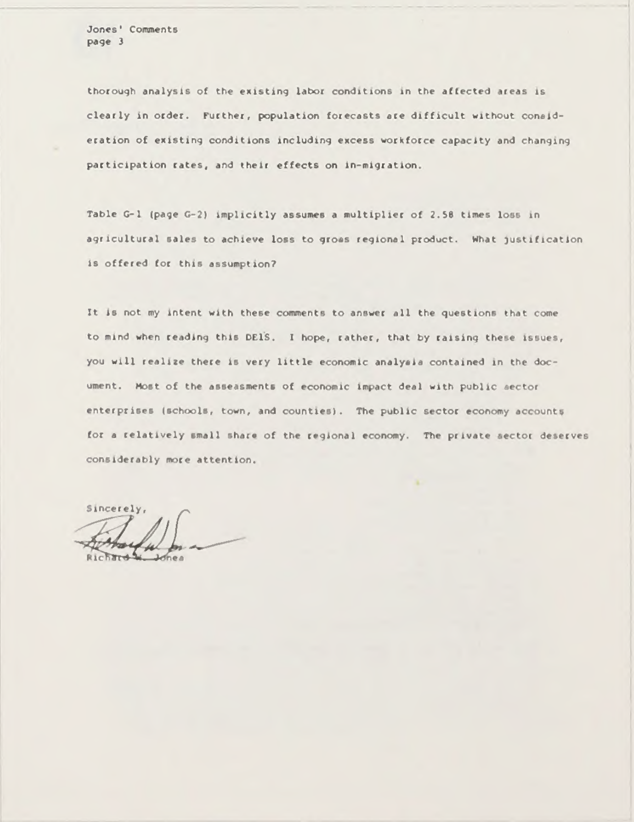
Big Horn County	$3,663,600
Powder River County	23,444,820.

When analyzing impacts on income, one must consider the effects of significant population increases on local inflation. There will be substantial demand pressure on local markets, particularly housing. Land rents may rise faster than personal income, perhaps leading to a decrease in real per capita income. Using data from comparable regions which have already experienced rapid development, you should attempt to quantify this effect.

With respect to employment, the projections you offer in this DEIS are of little use, since there is no basis for comparison. Using the Montana Employment And Labor Force Monthly Report, February, 1981 (produced by the Montana Department of Labor and Industry, Research and Analysis Division, in cooperation with the U.S. Department of Labor, Employment and Training Administration), I have made some observations.

In 1979, Big Horn County had 5592 employed persons, out of a workforce of 5888 (unemployment rate = 5.0%). The unemployment rate in Big Horn has generally trended downward since 1973. In Powder River County, there were 1249 employed persons in 1979, out of a workforce of 1285 (unemployment rate = 2.8%). Powder River County unemployment has trended upward since 1970.

While these figures are interesting, they cannot be compared without some notion of workforce participation rates. For instance, do higher wages in one county induce more entrance into the labor pool, thereby increasing unemployment? Some



Jones' Comments
page 3

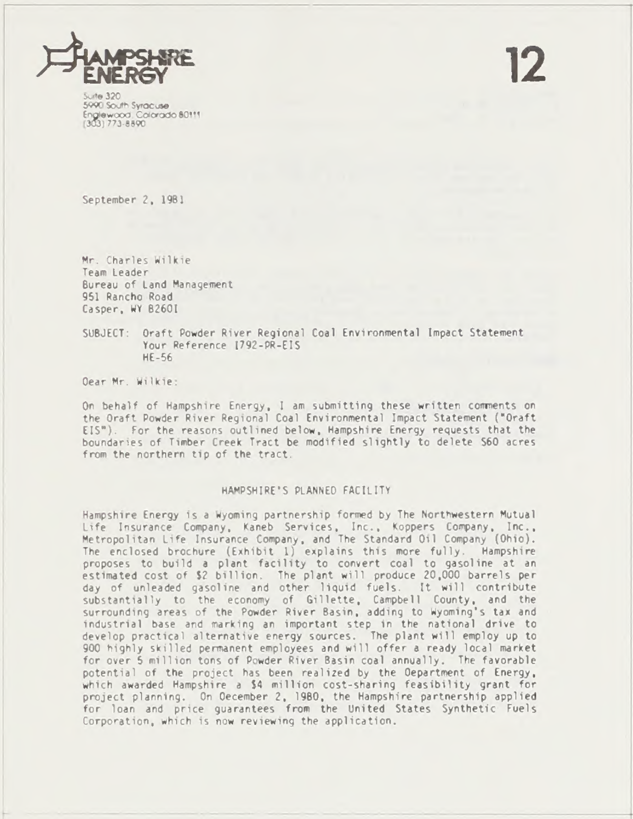
thorough analysis of the existing labor conditions in the affected areas is clearly in order. Further, population forecasts are difficult without consideration of existing conditions including excess workforce capacity and changing participation rates, and their effects on in-migration.

Table G-1 (page G-2) implicitly assumes a multiplier of 2.58 times loss in agricultural sales to achieve loss to gross regional product. What justification is offered for this assumption?

It is not my intent with these comments to answer all the questions that come to mind when reading this DEIS. I hope, rather, that by raising these issues, you will realize there is very little economic analysis contained in the document. Most of the assessments of economic impact deal with public sector enterprises (schools, town, and counties). The public sector economy accounts for a relatively small share of the regional economy. The private sector deserves considerably more attention.

Sincerely,

Richard W. Jones



HAMPSHIRE
ENERGY

Suite 320
5990 South Syracuse
Englewood, Colorado 80111
(303) 773-8890

12

September 2, 1981

Mr. Charles Wilkie
Team Leader
Bureau of Land Management
951 Rancho Road
Casper, WY 82601

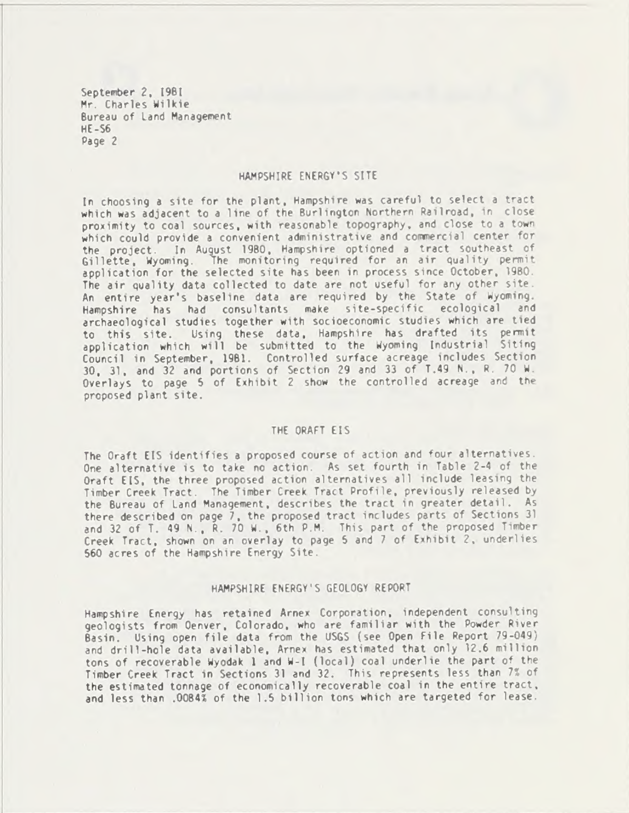
SUBJECT: Draft Powder River Regional Coal Environmental Impact Statement
Your Reference 1792-PR-EIS
HE-56

Dear Mr. Wilkie:

On behalf of Hampshire Energy, I am submitting these written comments on the Draft Powder River Regional Coal Environmental Impact Statement ("Draft EIS"). For the reasons outlined below, Hampshire Energy requests that the boundaries of Timber Creek Tract be modified slightly to delete 560 acres from the northern tip of the tract.

HAMPSHIRE'S PLANNED FACILITY

Hampshire Energy is a Wyoming partnership formed by The Northwestern Mutual Life Insurance Company, Kaneb Services, Inc., Koppers Company, Inc., Metropolitan Life Insurance Company, and The Standard Oil Company (Ohio). The enclosed brochure (Exhibit 1) explains this more fully. Hampshire proposes to build a plant facility to convert coal to gasoline at an estimated cost of $2 billion. The plant will produce 20,000 barrels per day of unleaded gasoline and other liquid fuels. It will contribute substantially to the economy of Gillette, Campbell County, and the surrounding areas of the Powder River Basin, adding to Wyoming's tax and industrial base and marking an important step in the national drive to develop practical alternative energy sources. The plant will employ up to 900 highly skilled permanent employees and will offer a ready local market for over 5 million tons of Powder River Basin coal annually. The favorable potential of the project has been realized by the Department of Energy, which awarded Hampshire a $4 million cost-sharing feasibility grant for project planning. On December 2, 1980, the Hampshire partnership applied for loan and price guarantees from the United States Synthetic Fuels Corporation, which is now reviewing the application.



September 2, 1981
Mr. Charles Wilkie
Bureau of Land Management
HE-56
Page 2

HAMPSHIRE ENERGY'S SITE

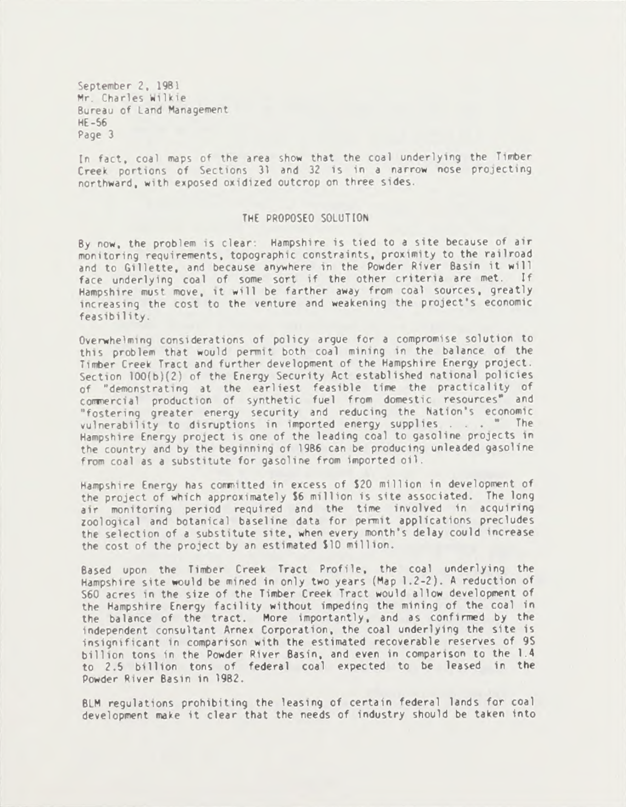
In choosing a site for the plant, Hampshire was careful to select a tract which was adjacent to a line of the Burlington Northern Railroad, in close proximity to coal sources, with reasonable topography, and close to a town which could provide a convenient administrative and commercial center for the project. In August 1980, Hampshire optioned a tract southeast of Gillette, Wyoming. The monitoring required for an air quality permit application for the selected site has been in process since October, 1980. The air quality data collected to date are not useful for any other site. An entire year's baseline data are required by the State of Wyoming. Hampshire has had consultants make site-specific ecological and archaeological studies together with socioeconomic studies which are tied to this site. Using these data, Hampshire has drafted its permit application which will be submitted to the Wyoming Industrial Siting Council in September, 1981. Controlled surface acreage includes Section 30, 31, and 32 and portions of Section 29 and 33 of T.49 N., R. 70 W. Overlays to page 5 of Exhibit 2 show the controlled acreage and the proposed plant site.

THE DRAFT EIS

The Draft EIS identifies a proposed course of action and four alternatives. One alternative is to take no action. As set fourth in Table 2-4 of the Draft EIS, the three proposed action alternatives all include leasing the Timber Creek Tract. The Timber Creek Tract Profile, previously released by the Bureau of Land Management, describes the tract in greater detail. As there described on page 7, the proposed tract includes parts of Sections 31 and 32 of T. 49 N., R. 70 W., 6th P.M. This part of the proposed Timber Creek Tract, shown on an overlay to page 5 and 7 of Exhibit 2, underlies 560 acres of the Hampshire Energy Site.

HAMPSHIRE ENERGY'S GEOLOGY REPORT

Hampshire Energy has retained Arnex Corporation, independent consulting geologists from Denver, Colorado, who are familiar with the Powder River Basin. Using open file data from the USGS (see Open File Report 79-049) and drill-hole data available, Arnex has estimated that only 12.6 million tons of recoverable Wyodak 1 and W-1 (local) coal underlie the part of the Timber Creek Tract in Sections 31 and 32. This represents less than 7% of the estimated tonnage of economically recoverable coal in the entire tract, and less than .0084% of the 1.5 billion tons which are targeted for lease.



September 2, 1981
Mr. Charles Wilkie
Bureau of Land Management
HE-56
Page 3

In fact, coal maps of the area show that the coal underlying the Timber Creek portions of Sections 31 and 32 is in a narrow nose projecting northward, with exposed oxidized outcrop on three sides.

THE PROPOSED SOLUTION

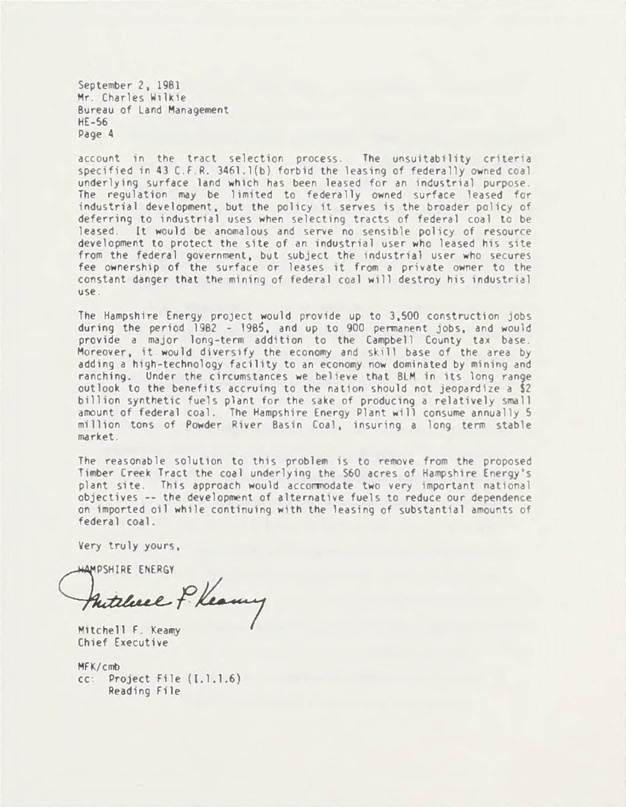
By now, the problem is clear: Hampshire is tied to a site because of air monitoring requirements, topographic constraints, proximity to the railroad and to Gillette, and because anywhere in the Powder River Basin it will face underlying coal of some sort if the other criteria are met. If Hampshire must move, it will be farther away from coal sources, greatly increasing the cost to the venture and weakening the project's economic feasibility.

Overwhelming considerations of policy argue for a compromise solution to this problem that would permit both coal mining in the balance of the Timber Creek Tract and further development of the Hampshire Energy project. Section 100(b)(2) of the Energy Security Act established national policies of "demonstrating at the earliest feasible time the practicality of commercial production of synthetic fuel from domestic resources" and "fostering greater energy security and reducing the Nation's economic vulnerability to disruptions in imported energy supplies . . . " The Hampshire Energy project is one of the leading coal to gasoline projects in the country and by the beginning of 1986 can be producing unleaded gasoline from coal as a substitute for gasoline from imported oil.

Hampshire Energy has committed in excess of $20 million in development of the project of which approximately $6 million is site associated. The long air monitoring period required and the time involved in acquiring zoological and botanical baseline data for permit applications precludes the selection of a substitute site, when every month's delay could increase the cost of the project by an estimated $10 million.

Based upon the Timber Creek Tract Profile, the coal underlying the Hampshire site would be mined in only two years (Map 1.2-2). A reduction of 560 acres in the size of the Timber Creek Tract would allow development of the Hampshire Energy facility without impeding the mining of the coal in the balance of the tract. More importantly, and as confirmed by the independent consultant Arnex Corporation, the coal underlying the site is insignificant in comparison with the estimated recoverable reserves of 95 billion tons in the Powder River Basin, and even in comparison to the 1.4 to 2.5 billion tons of federal coal expected to be leased in the Powder River Basin in 1982.

BLM regulations prohibiting the leasing of certain federal lands for coal development make it clear that the needs of industry should be taken into



September 2, 1981
Mr. Charles Wilkie
Bureau of Land Management
HE-56
Page 4

account in the tract selection process. The unsuitability criteria specified in 43 C.F.R. 3461.1(b) forbid the leasing of federally owned coal underlying surface land which has been leased for an industrial purpose. The regulation may be limited to federally owned surface leased for industrial development, but the policy it serves is the broader policy of deferring to industrial uses when selecting tracts of federal coal to be leased. It would be anomalous and serve no sensible policy of resource development to protect the site of an industrial user who leased his site from the federal government, but subject the industrial user who secures fee ownership of the surface or leases it from a private owner to the constant danger that the mining of federal coal will destroy his industrial use.

The Hampshire Energy project would provide up to 3,500 construction jobs during the period 1982 - 1985, and up to 900 permanent jobs, and would provide a major long-term addition to the Campbell County tax base. Moreover, it would diversify the economy and skill base of the area by adding a high-technology facility to an economy now dominated by mining and ranching. Under the circumstances we believe that BLM in its long range outlook to the benefits accruing to the nation should not jeopardize a $2 billion synthetic fuels plant for the sake of producing a relatively small amount of federal coal. The Hampshire Energy Plant will consume annually 5 million tons of Powder River Basin Coal, insuring a long term stable market.

The reasonable solution to this problem is to remove from the proposed Timber Creek Tract the coal underlying the 560 acres of Hampshire Energy's plant site. This approach would accommodate two very important national objectives -- the development of alternative fuels to reduce our dependence on imported oil while continuing with the leasing of substantial amounts of federal coal.

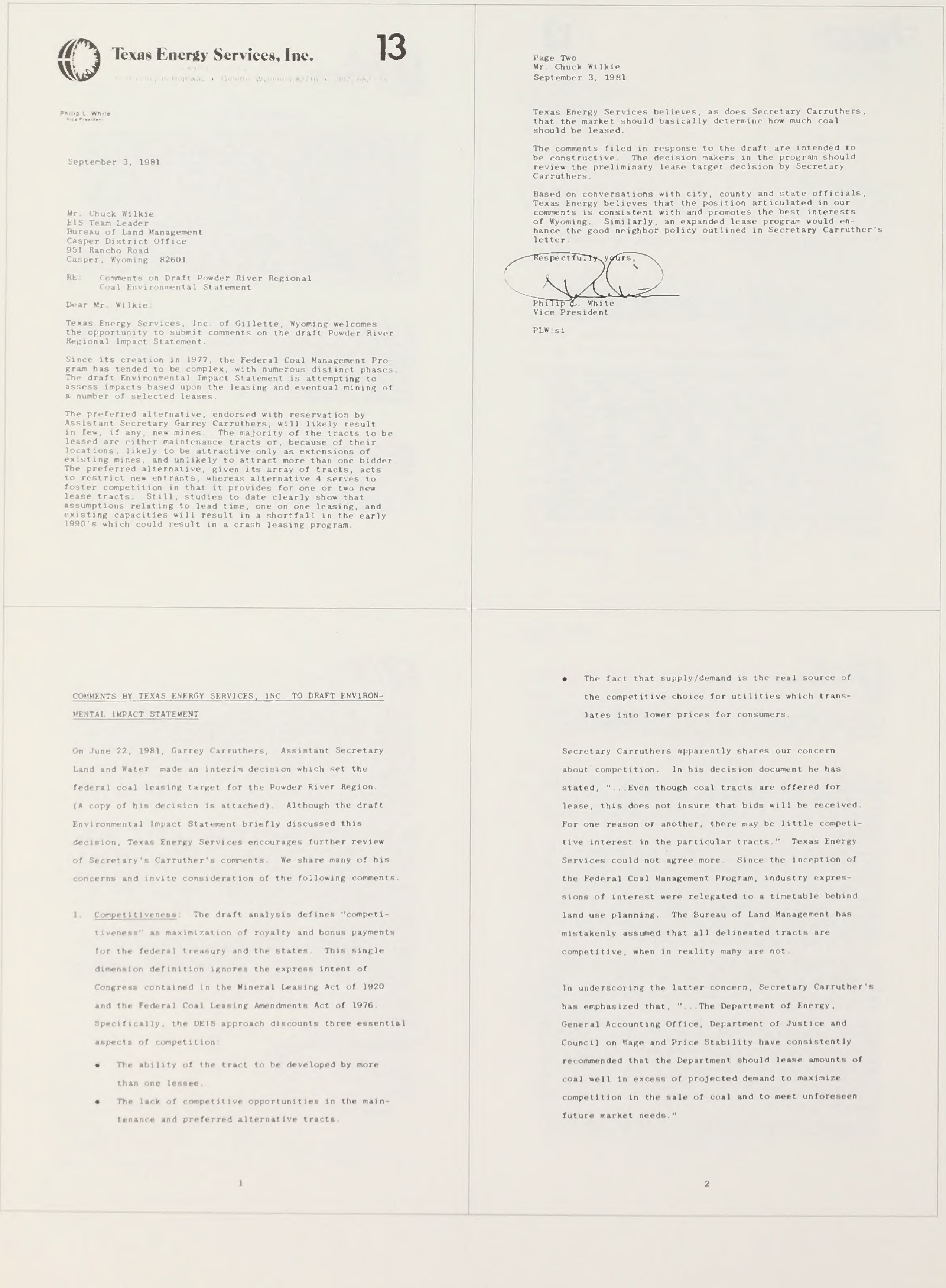
Very truly yours,

HAMPSHIRE ENERGY

Mitchell F. Keamy

Mitchell F. Keamy
Chief Executive

MFK/cmb
cc: Project File (1.1.1.6)
Reading File



Texas Energy Services, Inc.
[illegible] Highway • Gillette, Wyoming 82716 • (307) 682-[illegible]

Philip L. White
Vice President

13

September 3, 1981

Mr. Chuck Wilkie
EIS Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, Wyoming 82601

RE: Comments on Draft Powder River Regional
Coal Environmental Statement

Dear Mr. Wilkie:

Texas Energy Services, Inc. of Gillette, Wyoming welcomes the opportunity to submit comments on the draft Powder River Regional Impact Statement.

Since its creation in 1977, the Federal Coal Management Program has tended to be complex, with numerous distinct phases. The draft Environmental Impact Statement is attempting to assess impacts based upon the leasing and eventual mining of a number of selected leases.

The preferred alternative, endorsed with reservation by Assistant Secretary Garrey Carruthers, will likely result in few, if any, new mines. The majority of the tracts to be leased are either maintenance tracts or, because of their locations, likely to be attractive only as extensions of existing mines, and unlikely to attract more than one bidder. The preferred alternative, given its array of tracts, acts to restrict new entrants, whereas alternative 4 serves to foster competition in that it provides for one or two new lease tracts. Still, studies to date clearly show that assumptions relating to lead time, one on one leasing, and existing capacities will result in a shortfall in the early 1990's which could result in a crash leasing program.

Page Two
Mr. Chuck Wilkie
September 3, 1981

Texas Energy Services believes, as does Secretary Carruthers, that the market should basically determine how much coal should be leased.

The comments filed in response to the draft are intended to be constructive. The decision makers in the program should review the preliminary lease target decision by Secretary Carruthers.

Based on conversations with city, county and state officials, Texas Energy believes that the position articulated in our comments is consistent with and promotes the best interests of Wyoming. Similarly, an expanded lease program would enhance the good neighbor policy outlined in Secretary Carruther's letter.

Respectfully yours,

Philip L. White
Vice President

PLW:si

COMMENTS BY TEXAS ENERGY SERVICES, INC. TO DRAFT ENVIRONMENTAL IMPACT STATEMENT

On June 22, 1981, Garrey Carruthers, Assistant Secretary Land and Water made an interim decision which set the federal coal leasing target for the Powder River Region. (A copy of his decision is attached). Although the draft Environmental Impact Statement briefly discussed this decision, Texas Energy Services encourages further review of Secretary's Carruther's comments. We share many of his concerns and invite consideration of the following comments.

1. Competitiveness: The draft analysis defines "competitiveness" as maximization of royalty and bonus payments for the federal treasury and the states. This single dimension definition ignores the express intent of Congress contained in the Mineral Leasing Act of 1920 and the Federal Coal Leasing Amendments Act of 1976. Specifically, the DEIS approach discounts three essential aspects of competition:
   - The ability of the tract to be developed by more than one lessee.
   - The lack of competitive opportunities in the maintenance and preferred alternative tracts.
   - The fact that supply/demand is the real source of the competitive choice for utilities which translates into lower prices for consumers.

Secretary Carruthers apparently shares our concern about competition. In his decision document he has stated, "...Even though coal tracts are offered for lease, this does not insure that bids will be received. For one reason or another, there may be little competitive interest in the particular tracts." Texas Energy Services could not agree more. Since the inception of the Federal Coal Management Program, industry expressions of interest were relegated to a timetable behind land use planning. The Bureau of Land Management has mistakenly assumed that all delineated tracts are competitive, when in reality many are not.

In underscoring the latter concern, Secretary Carruther's has emphasized that, "...The Department of Energy, General Accounting Office, Department of Justice and Council on Wage and Price Stability have consistently recommended that the Department should lease amounts of coal well in excess of projected demand to maximize competition in the sale of coal and to meet unforeseen future market needs."

2. Lead Time: The following lead time assumption utilized in the DEIS appears substantially flawed:

> "9. A three year period (1982-1985) for mine and reclamation plan development and approval would follow leasing. During this time further information on cultural resources would be collected, and a permit obtained for surface mining. Facilities construction would require two years (1986-1987); the resulting mine would be in full production by 1990." (DEIS p. 14)

Texas Energy Services has conducted an extensive analysis of coal mine development. It was determined that at a minimum the tracts require five years for engineering and environmental/permitting approvals. This is at least two more years than assumed by the draft. Furthermore, two years will be required for construction. This totals seven years from lease issuance. Given a 1982 lease sale, new leases will not be capable of commencing operations prior to 1989-1990.

Texas Energy also takes exception to the assumption that full production will occur within three years of initial production. For leases expected to produce 15 million tons per year at least five years are needed; for lease tracts producing 10 million tons per year at least four years are needed to full production. Texas Energy's analyses are supported by a DOI contracted study. (See "Impact of Government Regulations on Coal Mine Start-Up and Production," Policy Planning and Evaluation Inc., May, 1981.)

Obviously, a shortfall or deficit will occur between 1990 to 1994, as the 1982 tracts will not produce at full capacity until 1994, not 1990. As a result, the 1982 sale should be based upon 1994 or 1995 requirements.

Secretary Carruthers apparently shares our concern that the 1990 based analysis is wanting. He has suggested that, "...The most likely scenario is to be based upon our estimates of probable production or demand for coal from the Powder River region in 1990 and 1995."

3. Shortfalls: The following "existing capacity" assumption, together with the assumed tonnages included in Table 2-2, appear to be highly optimistic:

> "3. Existing and proposed mines, and mines resulting from non-competitive leases and PRLA's would be in production by 1990." (DEIS p. 13)

Secretary Carruthers is critical of the BLM assumption regarding existing lease and PRLA production capacity. He has responded with, "...The regional target calculation appears to have been influenced by a general assumption that many of the existing leases and all of the preference right lease applications within this region, will go into production. This assumption does not take into full account the many variables which determine whether production will actually occur." This unrealistic assumption was largely responsible for the Regional Coal Team decision to adopt a low-level leasing target.

Texas Energy Services has analyzed the PRLA's and existing leases for Wyoming. It is possible that pending PRLA's will result in zero production and existing leases will produce no more than 280 million tons. This would result in a shortfall of 70-80 million tons per year by 1990. This discrepancy alone would require an additional four, 15 million tons per year tracts, roughly equivalent to 1.6 Billion tons of reserves. (See accompanying tables.)

Secretary Carruthers stresses the importance of the market place. On page 2 he has stated, "...I am personally committed to a market orientation, that is, letting the market basically determine how much coal should be leased. There is serious doubt in my mind that a level of 1.4-1.5 Billion tons would be sufficient for the Powder River sale."

Texas Energy concurs with the Secretary. Numerous studies reinforce this view. They include: GAO - "Shortfall in Leasing Coal from Federal Lands: What Effect on National Energy Goals," August, 1980; IFC Inc. "Analysis and Critique of the Department of Energy's August 7, 1980 Report, "October, 1980; DOE - "Coal Competition: Prospects for the 1980's," January, 1981.

4. Socio-Economic Impact: The DEIS's failure to adequately address which lease tracts will likely result in new mines together with when they will most probably gear up to full capacity, has resulted in both an overstatement and an understatement of probable socio-economic impacts. The statement has:

- Overstated anticipated regional environmental and socio-economic impacts as a consequence of over estimating production from existing leases, new leases, and PRLA's.

- Understated longer term impacts to the consumer, the industry, the region, and the Nation as a result of having failed to address the likelyhood of an ensuing supply shortage as a result of having offered to little coal for lease under the preferred alternative.

An independent appraisal of Wyoming tracts has determined that it is indeed plausible that the impact of the 2.6 billion ton alternative could be substantially less than the DEIS's projection for the preferred 1.5 billion ton alternative. The study concluded that the employment projections for alternative 4 were roughly one-third those forecast by the DEIS and that the total population impact in 1995 was virtually half that projected by the DEIS for 1990. In fact, the preferred alternative with its negligible growth potential could indeed prove to be injurious to the City of Gillette's best interests, in that the City has undertaken considerable obligations to accomodate growth which may not now be forthcoming.

The Secretary apparently shares our misgivings about the DEIS's impact projections and our concern that the preferred alternative may in fact be detrimental to the consumer and the Nation. Secretary Carruthers' concerns are outlined in his decision document in which he has stated that, "...The one to one relationship between DOE's production goals and Interior's leasing targets, and the assumption that every tract leased will be developed are probably incorrect. Such linkages tend to overstate impacts of leasing." Additionally he has stated that," ...Secretary Watt is committed to

a policy of making more of the Nation's energy resources available to the public for development, consistent with the letter and intent of existing environmental and other statutes. This policy is central to the objectives of stabilizing the price of energy paid by consumers and reducing our dependance on foreign energy sources." Texas Energy concurs and suggests that the final analysis fully address the Secretary's concerns.

5. Maintenance Tracts and New Competition: Analysis of the preferred alternative reveals that existing mines have benefitted significantly as a consequence of current lease tract configurations and as a result of a new category of leases referred to as production maintenance tracts. No less than six companies with existing mines have a distinct advantage for additional tonnage. It is highly unlikely that any serious competition will occur for their tracts. Nonetheless the tracts are considered "competitive" for bidding purposes under the RCT Analysis. It should be noted that production maintenance tracts are an administrative creation not authorized by statute or regulation.

We question the need for production maintenance tracts for existing mines that have a thirty year life and reserves in excess of 300 million tons.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

JUN 2 2 1981

Memorandum

To: Director, Bureau of Land Management

From: Assistant Secretary - Land and Water Resources

Subject: Leasing Target for the Powder River Coal Production Region

The Secretary of the Interior has delegated to me his authority under 43 CFR 3420.3 to set Federal coal leasing targets. It is now necessary that the Department identify a leasing figure for use as the preferred leasing alternative in the environmental impact statement (EIS) on the Powder River region 1982 coal sale. My decision at this time is, therefore, an interim one in the process of determining how much coal will ultimately be offered for sale in the Powder River region.

The regional coal team (RCT) has recommended that the Department offer 1.4 - 1.5 billion tons of coal reserves in the proposed 1982 sale. From my discussions with the other Assistant Secretaries, it is evident that the national interest will best be served by a decision to offer a sufficient amount of Federal coal in the Powder River region to satisfy the demand for reserves in that region, while permitting the development of these reserves in line with the Department's coal regulations. Those regulations, of course, are designed to ensure development with appropriate environmental safeguards. The RCT's recommendation reflects its opinion as to the amount of Federal coal that should be leased to both satisfy the Department of Energy's (DOE's) projection of the coal market in this region and meet local concerns as to the level of development and its effects. The RCT recommendation may have minimized in its leasing target calculation several factors which indicate a need for a higher leasing level. The one-to-one relationship between DOE's production goals and Interior's leasing targets, and the assumption that every tract leased will be developed are probably incorrect. Such linkages tend to overstate impacts of leasing. Further, the regional target calculation appears to have been influenced by a general assumption that many of the existing leases and all the preference right lease applications within this region will go into production. This assumption does not take into full account the many variables which determine whether production will actually occur.

Even though coal tracts are offered for lease, this does not ensure that bids will be received. For one reason or another there may be little competitive interest in particular tracts. The basic fact is that coal production tends to be market driven or demand oriented. It also can be expected that if industry has a selection of tracts available for production, the most economical coal will be mined first, other considerations being equal. In addition, the DOE, General Accounting Office, Department of Justice, and Council on Wage and Price Stability have consistently recommended that the Department should lease amounts of coal well in excess of projected demand to maximize competition in the sale of coal and to meet unforeseen future market needs.

After considering all of these factors, I am at this time accepting the RCT's recommendation as the preferred leasing alternative for the EIS. My decision is based on the fact that the RCT's recommendation reflects the principal assessment done to date on how to meet the demand for Powder River reserves. However, I wish to make it clear that I am personally committed to a market orientation, that is, letting the market basically determine how much coal should be leased. There is serious doubt, in my mind, that a level of 1.4 - 1.5 billion tons will be sufficient for the Powder River sale. The Department, of course, has the option of deciding to lease at a higher or lower level once all decision factors are before the Secretary, including the final regional EIS.

In light of these considerations, the Powder River EIS must give full attention to all of the available leasing alternatives, and the scenarios of coal production likely to result from each alternative. Two production scenarios should be evaluated for those alternatives ranging from the preferred alternative to the offering of 2.5 billion tons of coal. The most likely scenario is to be based on our estimates of probable production or demand for coal from the Powder River region in 1990 and 1995. This scenario will assume that end-use demand drives the quantity of coal that is actually produced. The second scenario is to assume that all Federal coal offered for sale in 1982 will be (a) sold to producers, and (b) brought into full production in the early 1990's.

This decision generally reflects my concern about the role which market forces play in determining the extent of Federal coal leasing. Secretary Watt is committed to a policy of making more of the Nation's energy resources available to the public for development, consistent with the letter and intent of existing environmental and other statutes. This policy is central to the objectives of stabilizing the price of energy paid by consumers and reducing our dependence on foreign energy sources. Also, I wish to stress that the role and involvement of the Governors, particularly through their participation on the RCT, is an issue of paramount importance to me. I fully intend, as we go forward with the Powder River effort, to maintain the Secretary's good neighbor policy and to enhance our working relationship with the Governors.

PROJECTED 1990 PRODUCTION FROM THE POWDER RIVER REGION, WYO./MONT.

WYOMING	PRB DEIS Estimate MM tpy	Revised Estimate MM tpy
Campbell County Existing Mines		
Belle Ayr	19.0	19.0
Black Thunder	20.0	20.0
Caballo	12.0	12.0
Clovis Point	4.0	4.0
Cordero	15.0	15.0
Eagle Butte	20.0	20.0
Ft. Union	1.2	1.2
Jacobs Ranch	14.0	14.0
Rawhide	24.0	24.0
Wyodak	5.0	5.0
Subtotal Existing Mines	134.2	134.2
Potential Mines		
Buckskin	1.5	1.5
Coal Creek	10.0	10.0
East Gillette	11.0	11.0
Pronghorn	5.0	NE 1/
Caballos Rojo	15.0	15.0
South Rawhide	7.0	NE
Wildcat Creek	10.0	NE
Rochelle	11.0	5.0
North Antelope	8.0	8.0
Ory Fork	8.0	8.0
Wymo Fuels	4.4	4.4
Subtotal Potential Mines	90.9	62.9
PRLA's and related	16.8	NE
Total Campbell County	241.9	197.1
Converse County		
Dave Johnson (existing)	3.2	3.2
Antelope/NERCO (proposed)	10.0	10.0
PRLA's and Related	14.8	NE
Total Converse County	28.0	13.2
Johnson-Sheridan Counties		
Big Horn (existing)	4.5	4.5
Black Mountain (potential)	.5	.5
Dutchman (proposed)	2.0	NE
Ash Creek/PSO (proposed)	.5	NE
PRLA's and Related	14.0	NE
Total Johnson-Sheridan Counties	21.5	5.0
TOTAL WYOMING 1990 COAL PRODUCTION	291.4	215.3
MONTANA		
Big Horn County Existing Mines		
Decker	12.2	12.2
Spring Creek	7.0	7.0
Absaloka	10.0	10.0
Subtotal Existing Mines	29.2	29.2
Potential Mines		
CX-Kiewit	4.0	4.0
Crow-Young Creek	-	NE
Subtotal Potential Mines	4.0	4.0
Total Big Horn County	33.2	33.2
Rosebud County		
Colstrip (existing)	19.1	19.1
Big Sky (existing)	4.2	4.2
Montco (proposed)	9.0	9.0
Total Rosebud County	32.3	32.3
Powder River County		
Coal Creek (existing)	.03	.03
Total Powder River County	.03	.03
Cheyenne Reservation		
CX Ranch-Consol (proposed)	8.0	NE
Greenleaf-Miller (Peabody)	4.0	NE
Total Cheyenne Reservation	12.0	-
TOTAL MONTANA 1990 PRODUCTION	77.53	65.53
TOTAL POWDER RIVER 1990 PRODUCTION	368.93	280.83

1/ Pronghorn to be mined as part of Caballos Rojo project.

LEGEND: "NE" = "Not Economic"

NOTE: A comprehensive and critial review of the PRLA's in Campbell and Converse Counties shows conclusively that the PRLA tonnage assumed in the DEIS is wholly unrealistic. Analysis of the resource, its mineability (including contiguous ownership), transportation and environmental factors suggests strongly that no significant production can be expected from the PRLA's by 1990, except as extensions of other operations.

14

704 Oasis Drive
Billings, MT 59105
September 4, 1981

Mr. Charles Wilke
EIS Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, WY 82601

Dear Mr. Wilke:

As a concerned citizen who has attended many of the EIS public hearings on the Draft Power River Regional Coal Environmental Impact Statement, I am disturbed by some of the statements which have been made regarding the amount of federal coal under lease and the necessity of leasing more federal coal. Some groups would have you believe that there is no need for additional leasing since much of the federal coal currently leased has not been mined. Of course, this ignores the real problems associated with economically mineable reserves transportation systems quality of the deposits leased, in short, all that which is necessary to make a project feasible.

Probably the most intriguing and amazing statements that I have heard is that "there is no need for additional leasing because the market is soft." Apparently, these groups and individuals feel that it is the United States Government's duty to keep the price of coal at a high level. Consider this analogy, in times of low beef prices perhaps the Bureau of Land Management should rescind grazing leases in order to raise prices. By restricting access to the market place you create upward pressure on prices.

I would like to suggest that the Bureau adopt a strategy which I know is politically questionable, but then good ideas often are. I suggest that the United States offer all federal coal for lease. Retain diligence requirements and apply any sort of environmental restraints and unsuitability criteria at the mine permit stage. Such an approach would insure that the most economically viable projects would be developed and that the United States would have an adequate supply of coal available to meet its needs. By retaining some sort of diligence requirements, speculation would be discouraged but serious attempts at putting together mineable properties would have free access to the market. I feel such a course of action is in the best interests of the nation.

Sincerely,

Kenneth L. Williams
KENNETH L. WILLIAMS

KLW:pc

SOHIO ROYAL LAND COMPANY

15

875 SOUTH NIAGARA STREET SUITE 800 ● DENVER CO 80224

TELEPHONE [illegible]

September 3, 1981

Mr. Chuck Wilkie
EIS Project Leader
Casper District Office
951 Rancho Road
Casper, Wyoming 82601

Dear Mr. Wilkie:

Re: Public Hearing for the Powder River Basin Coal Leasing EIS
Gillette, Wyoming on August 19, 1981

There is a possibility in my oral comments I transposed several numbers in expressing this Company's preference for the leasing alternative. Royal Land Company would like to see either Alternative 2 or 4 as the preferred alternative rather than that which was selected in the draft EIS. It was in my discussion of Royal's preferred alternatives that I may have transposed the numbers.

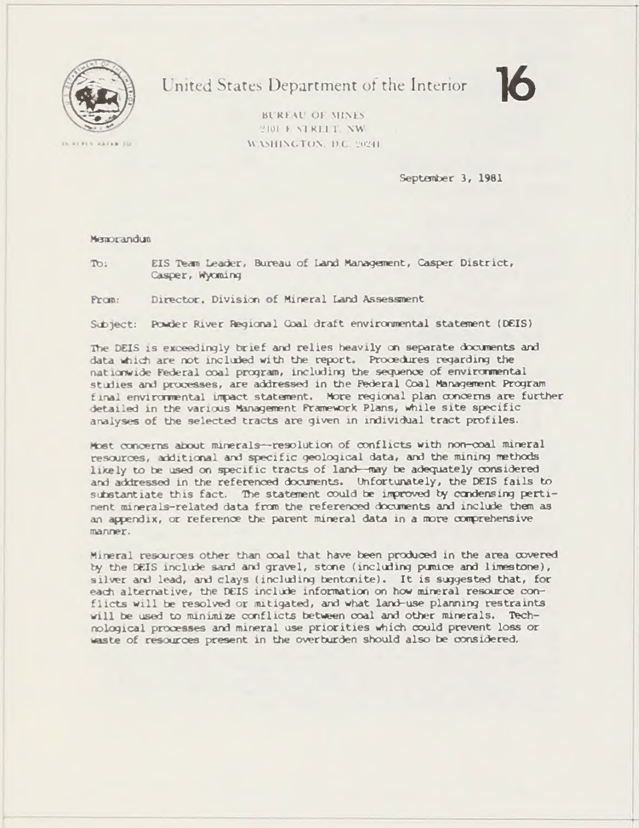
If possible, please correct the public statement and for the record.

Very truly yours,

ROYAL LAND COMPANY

Robert F. Matthias
Robert F. Matthias
Senior Geologist

RFM:jas



16

United States Department of the Interior

BUREAU OF MINES
2401 E STREET, NW
WASHINGTON, D.C. 20241

September 3, 1981

Memorandum

To: EIS Team Leader, Bureau of Land Management, Casper District, Casper, Wyoming

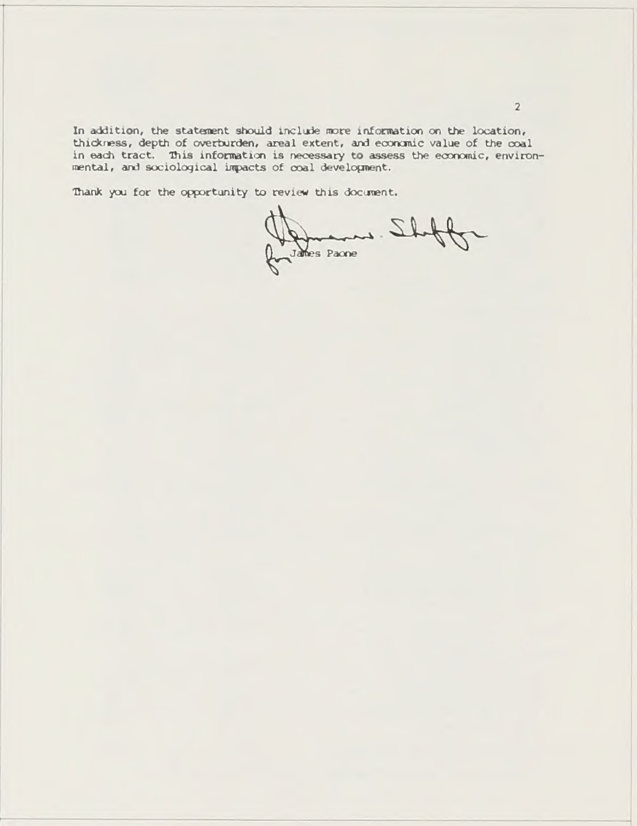
From: Director, Division of Mineral Land Assessment

Subject: Powder River Regional Coal draft environmental statement (DEIS)

The DEIS is exceedingly brief and relies heavily on separate documents and data which are not included with the report. Procedures regarding the nationwide Federal coal program, including the sequence of environmental studies and processes, are addressed in the Federal Coal Management Program final environmental impact statement. More regional plan concerns are further detailed in the various Management Framework Plans, while site specific analyses of the selected tracts are given in individual tract profiles.

Most concerns about minerals—resolution of conflicts with non-coal mineral resources, additional and specific geological data, and the mining methods likely to be used on specific tracts of land—may be adequately considered and addressed in the referenced documents. Unfortunately, the DEIS fails to substantiate this fact. The statement could be improved by condensing pertinent minerals-related data from the referenced documents and include them as an appendix, or reference the parent mineral data in a more comprehensive manner.

Mineral resources other than coal that have been produced in the area covered by the DEIS include sand and gravel, stone (including pumice and limestone), silver and lead, and clays (including bentonite). It is suggested that, for each alternative, the DEIS include information on how mineral resource conflicts will be resolved or mitigated, and what land-use planning restraints will be used to minimize conflicts between coal and other minerals. Technological processes and mineral use priorities which could prevent loss or waste of resources present in the overburden should also be considered.

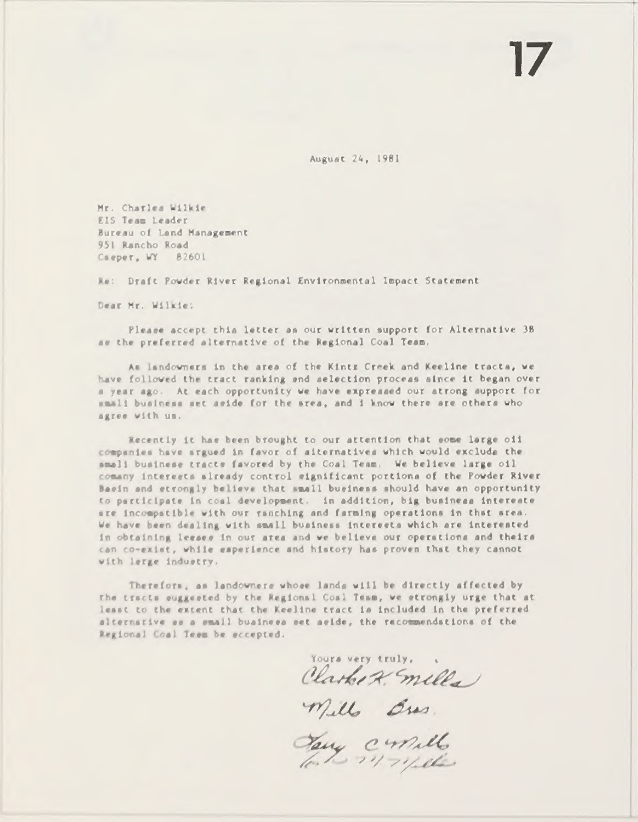


2

In addition, the statement should include more information on the location, thickness, depth of overburden, areal extent, and economic value of the coal in each tract. This information is necessary to assess the economic, environmental, and sociological impacts of coal development.

Thank you for the opportunity to review this document.

for James Paone



17

August 24, 1981

Mr. Charles Wilkie
EIS Team Leader
Bureau of Land Management
951 Rancho Road
Casper, WY 82601

Re: Draft Powder River Regional Environmental Impact Statement

Dear Mr. Wilkie:

Please accept this letter as our written support for Alternative 3B as the preferred alternative of the Regional Coal Team.

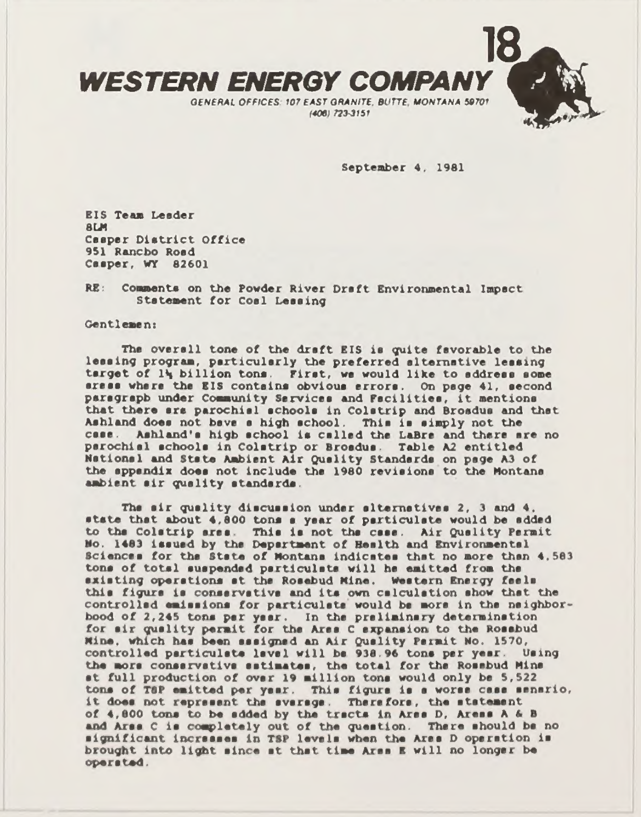
As landowners in the area of the Kintz Creek and Keeline tracts, we have followed the tract ranking and selection process since it began over a year ago. At each opportunity we have expressed our strong support for small business set aside for the area, and I know there are others who agree with us.

Recently it has been brought to our attention that some large oil companies have argued in favor of alternatives which would exclude the small business tracts favored by the Coal Team. We believe large oil comany interests already control significant portions of the Powder River Basin and strongly believe that small business should have an opportunity to participate in coal development. In addition, big business interests are incompatible with our ranching and farming operations in that area. We have been dealing with small business interests which are interested in obtaining leases in our area and we believe our operations and theirs can co-exist, while experience and history has proven that they cannot with large industry.

Therefore, as landowners whose lands will be directly affected by the tracts suggested by the Regional Coal Team, we strongly urge that at least to the extent that the Keeline tract is included in the preferred alternative as a small business set aside, the recommendations of the Regional Coal Team be accepted.

Yours very truly,

Clarke K. Mills
Mills Bros.
Terry C. Mills



18

WESTERN ENERGY COMPANY
GENERAL OFFICES: 107 EAST GRANITE, BUTTE, MONTANA 59701
(406) 723-3151

September 4, 1981

EIS Team Leader
BLM
Casper District Office
951 Rancbo Road
Casper, WY 82601

RE: Comments on the Powder River Draft Environmental Impact Statement for Coal Leasing

Gentlemen:

The overall tone of the draft EIS is quite favorable to the leasing program, particularly the preferred alternative leasing target of 1¼ billion tons. First, we would like to address some areas where the EIS contains obvious errors. On page 41, second paragraph under Community Services and Facilities, it mentions that there are parochial schools in Colstrip and Broadus and that Ashland does not have a high school. This is simply not the case. Ashland's high school is called the LaBre and there are no parochial schools in Colstrip or Broadus. Table A2 entitled National and State Ambient Air Quality Standards on page A3 of the appendix does not include the 1980 revisions to the Montana ambient air quality standards.

The air quality discussion under alternatives 2, 3 and 4, state that about 4,800 tons a year of particulate would be added to the Colstrip area. This is not the case. Air Quality Permit No. 1483 issued by the Department of Health and Environmental Sciences for the State of Montana indicates that no more than 4,583 tons of total suspended particulate will he emitted from the existing operations at the Rosebud Mine. Western Energy feels this figure is conservative and its own calculation show that the controlled emissions for particulate would be more in the neighborhood of 2,245 tons per year. In the preliminary determination for air quality permit for the Area C expansion to the Rosebud Mine, which has been assigned an Air Quality Permit No. 1570, controlled particulate level will be 938.96 tons per year. Using the more conservative estimates, the total for the Rosebud Mine at full production of over 19 million tons would only be 5,522 tons of TSP emitted per year. This figure is a worse case senario, it does not represent the average. Therefore, the statement of 4,800 tons to be added by the tracts in Area D, Areas A & B and Area C is completely out of the question. There should be no significant increases in TSP levels when the Area D operation is brought into light since at that time Area E will no longer be operated.

Letter
September 4, 1981
Page 2

On page 36 under the discussion on air quality, the statement is made that Colstrip does not meet the national ambient air quality standards for particulate and has been designated a nonattainment area "which is not expected to improve in the near future." Under the terms of Air Quality Permit No. 1483, Western Energy Company has committed to a mine-wide dust management plan which has made a significant reduction in the amount of particulate emitted at the Rosebud Mine. Data from the first two quarterly reports required as a condition of this permit suggests that the air shed in the Colstrip area is improving. It is Western Energy's contention that the Colstrip area was improperly designated a nonattainment area and has petitioned the Air Quality Bureau for a redesignation.

The surface water sections in alternatives 2, 3 and 4 address a 4% increase in dissolved solids in Armells Creek. On page 53 this explanation is given as an increase in dissolved solids due to leaching of mine spoils, and that the 4% increase would occur near Forsyth. We feel that this figure is too high and is based on conjecture, not previous experience. Probably a better figure to use is 1%.

William J. Robinson /mm
William J. Robinson
Manager, Corporate
Development

27008/A

19

OFFICE OF
County Commissioners
CAMPBELL COUNTY
Gillette, Wyoming 82716

September 9, 1981

Mr. Chuck Wilkie,
EIS Team Leader
BUREAU OF LAND MANAGEMENT
Casper District Office
951 Rancho Road
Casper, Wyoming 82601

Dear Mr. Wilkie:

The Campbell County Commissioners have reviewed the Draft Environmental Statement for the Powder River Region. In light of our review, we offer the following comments:

Campbell County prides itself on the efforts it has undertaken to cope with the social-economic problems that have been attendant with the development of coal in the area. The infrastructure of the County has now reached a point where it can accommodate reasonable growth without sacrificing quality of life. We encourage further growth of the coal industry provided that it is done in cooperation with industry and in compliance with the Wyoming Environmental Quality Act, the Wyoming Industrial Development Information and Siting Act, and our County and Municipal laws and ordinances.

In reviewing the four alternative courses of action described in the Draft EIS, we concur that the issue of primary concern is related to the impact of coal mine development and population increases on the affected communities. We have also reviewed Assistant Secretary Carruther's memorandum of June 22, 1981, and concur with his concern about the importance that the market forces play in determining what level of Federal coal should be leased. In our opinion, Alternative Four is the preferred alternative. By leasing the maximum level, steady growth will be maintained and the market will be stimulated to meet existing and future needs. It will eliminate many of the uncertainties involved with the other alternatives.

Mr. Chuck Wilkie Page -2- September 9, 1981

We respectfully request that our comments be considered in the preparation of the Final EIS and in Secretary Watt's final decision for coal leasing in the Powder River Coal Production Region.

Thank you for your time and consideration.

Sincerely,

CAMPBELL COUNTY BOARD OF COMMISSIONERS

Harry R. Underwood
Harry R. Underwood, Chairman

W. B. Fish, Member

Bob L. Tarver
Bob L. Tarver, Member

/bzh

cc: The Honorable Ed Herschler,
Governor, State of Wyoming

The Honorable Mike Enzi,
Mayor, City of Gillette

Mr. William Flaherty,
Campbell County Engineer

20

THE STATE OF WYOMING
ED HERSCHLER
GOVERNOR

Game and Fish Department

CHEYENNE, WYOMING 82002

EARL M. THOMAS
DIRECTOR

September 9, 1981

EIS 142/L1, Draft EIS
for Powder River Coal
Campbell County, WY & MT.

Mr. Cherles Wilkie, Team Leader
Bureau of Land Management
951 Rancho Road
Casper, Wyoming 82601

Dear Mr. Wilkie:

During our review of the Powder River Coal DEIS we found it difficult to determine the actual area covered by the document. A map of regional activity was included in the DEIS, but no DEIS boundaries were noted. Also, this map includes a lot of waters (Pathfinder, Alcova, Glendo, North Platte River, Bates Creek, Lake DeSmet, Keyhole, M. Fk., N. Fk., and S. Fk. Powder River and others) that were not mentioned in the DEIS.

Specific comments are as follows:

Page 2 - Soils, vegetation, reclamation - this section refers to Packer (1974) concerning the possibility of reclamation success. This is a relatively old reference. This would be more convincing if reference was made to a more recent publication or to ongoing studies.

The recreation section (Page 39) should point out that most outdoor recreation is limited by land access problems within the region, and that hunting, fishing, and camping increases will be felt on the edge of or outside the region. This section should also address the problem of meeting outdoor recreational demands caused by this coal leasing when fishing and camping are not now available in sufficient quantity in Campbell County, and when in the region some forms of hunting (elk, moose) are not available and others (deer, antelope, game birds) are restricted by private land ownership and trespass fees. The recreational impact of nearly 20,000 new people in Campbell County will be more significant than expressed in the DEIS.

Mr. Charles Wilkie
September 9, 1981
Page 2, EIS 142/L1

Page 3 - Summary - mentions that funding for urban recreation facilities would be available, and that the quality of dispersed recreation would be diminished under Alternative 1. Funding to maintain basic facilities for camping and fishing would be appropriate. The statement that new federal leasing would not appreciably affect dispersed recreation is questionable (depending on the scope considered - national vs. local).

Page 5 Purpose and need for leasing - this section essentially says that leasing is being done to meet set production goals. With the private coal in the region, already-leased coal, and preference right lease applications, the need for new leasing does not seem justified.

Pages 18-19 Alternative 3 and subalternatives should include mention of wildlife and recreation. Cumulative and off-site impacts were not mentioned.

Pages 22-24 - Table 2-1 displays cumulative environmental impacts; however, wildlife and fishing recreation were not displayed. Housing and population figures were provided. It should be assumed that these people will recreate at locations such as Keyhole Reservoir, Lake DeSmet and waters in the Bighorns.

Page 54 - Environmental Consequences, paragraph two, states that sewage effluent would increase and contamination would occur in the Tongue and North Platte Rivers. Then, based on low dissolved solids increases from the sewage, a determination of no significant impact to the aquatic biology is made. This method of analysis fails to recognize water quality problems from municipal sewage. A variety of state water quality standards apply to sewage effluent. Discussions of air quality relate to the Wyoming standards so it seems the same consideration should be given to water quality. Reliance on dissolved solids and percent depletions for water analyses, as was done throughout this DES, is not appropriate.

Pages 57-58 - Soils, Vegetation, Reclamation - revegetation may be a certainty in Campbell County, but reclamation to wildlife habitat is not.

Page 58 - Environmental Consequences - Wildlife - fails to mention fish.

Pages 58-59 - What is proposed to mitigate wildlife losses that are unavoidable?

Page 61 - Environmental Consequences - Recreation - says the greatest increases would be fishing in Montana and winter activities in Wyoming. Fishing in Wyoming was not mentioned. Demands on the nearest waters to the population centers affected can be expected to increase and should be addressed.

Mr. Charles Wilkie
September 9, 1981
Page 3, EIS 142/L1

Page 71, Table 4-4 - shows wildlife habitat "disturbed". How much of this 22,000 acres will be reclaimed to wildlife habitat?

In summary, the DEIS needs to include clarification of the area covered and improved display of impacts to terrestrial wildlife, except for big game, raptors and endangered species. Fisheries, fishing recreation and water quality also need additional consideration.

Please contact us if we may be of further help on this project.

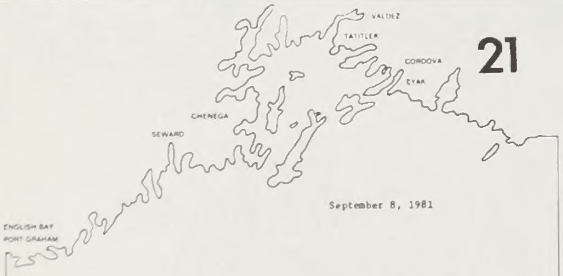
Sincerely,

W. Donald Dexter

W. DONALD DEXTER,
ASSISTANT DIRECTOR, OPERATIONS
WYOMING GAME AND FISH DEPARTMENT

WDD:HBM:mlr

cc: State Planning Coordinator
cc: Game Division
cc: Fish Division



21

September 8, 1981

Mr. Maxwell T. Lieurance, State Director
Bureau of Land Management
P. O. Box 1828
Cheyenne, Wyoming 82001

Dear Mr. Lieurance:

We appreciate the opportunity to submit our comments on the Draft Powder River Regional Coal Environmental Impact Statement, as released by your office on June 24, 1981.

Under the terms of Section 1430 of the Alaska National Interest Lands Conservation Act, P. L. 96-487, a copy of which is attached, Chugach Natives, Inc., has identified two areas of federal lands within the Powder River Basin for possible conveyance. These areas are 7,020 acres of subsurface estate in the Spring Draw area of Campbell County, Wyoming, and 4,240 acres of subsurface estate in the Youngs Creek area of Sheridan County, Wyoming. Copies of the appropriate maps and legal descriptions are attached.

We note that your preferred alternative provides for the leasing of the Spring Draw tract by the BLM during 1982, and for it to be in full production by about 1990. Tables 1-1 and 2-4, on pages 9 and 31 respectively, estimate 383 million tons of coal reserves on some 4,093 acres of uncommitted federal lands in the Spring Draw tract, for an estimated annual production of 14.3 million tons.

We believe that the Spring Draw tract offers excellent development opportunities to our corporation, as well as to Wyoming and the nation. Its transfer to our ownership would help satisfy our long-standing land claims dispute with the federal government, while allowing us to develop an area which would be developed under the federal government's ownership anyway. Its location ten miles north of Gilette provides easy access to

803 West Northern Lights Blvd., Suite 201, Anchorage, Alaska 99503, Phone (907) 276-1080 Chugach Natives, Inc.

Mr. Maxwell T. Lieurance
September 8, 1981
Page Two

long-haul rail transportation, if it is not burned locally for power generation. Moreover, the Tract Ranking in Table 1-3 on page 11 indicates that environmental and socio-economic impacts resulting from the development of the Spring Draw tract would not be severe.

In summary, we believe that the Spring Draw and Youngs Creek tracts in the Powder River Basin would be appropriate for conveyance to Chugach Natives, Inc., as part of the Chugach Region Study. We request that you provide for this possibility in your Final Environmental Impact Statement. Should you like any further information on the Chugach Region Study, I suggest that you contact Mr. Clay Beal, Moderator, Chugach National Forest, 2221 E. Northern Lights Blvd., Anchorage, Alaska, 99504.

Sincerely,

CHUGACH NATIVES, INC.

Carl A. Propes Jr., Director
Lands and Natural Resources

cc: EIS Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, Wyoming 82601

NORTH ANTELOPE COAL COMPANY
CAMPUS 8 OFFICE, SUITE 600, 12015 EAST 46TH AVENUE
DENVER, COLORADO 80239
(303) 371-7990

22

September 10, 1981

Mr. Chuck Wilkie
EIS Project Leader
Casper District Office
951 Rancho Road
Casper, Wyoming 82601

Re: Powder River Coal Draft EIS

Dear Mr. Wilkie:

I have reviewed the draft Powder River Regional Coal Environmental Import Statement which was released on or about July 24, 1981. This comment will be limited to a single issue, to wit: the failure of the proposed EIS to consider or even mention the proposed North Antelope Mine which is to be constructed in the extreme southern portion of Campbell County. The only mention made of North Antelope appears on page 27 of the proposed EIS under Preference Right Lease Applications wherein a North Antelope (Peabody) PRLA incorrectly shows 1.6 million tons per year production in 1990 and 2.3 million tons by 1995. We believe that the EIS needs to be substantially amended to take into proper consideration the North Antelope Mine.

The public record will reflect that the North Antelope Mine is in the advanced stages of the permitting process. Furthermore, by Federal Register notice, dated July 27, 1981, the Office of Surface Mining Reclamation and Enforcement published a notice of Intent to Prepare an Environmental Import Statement on the North Antelope Mine. Construction is expected to commence by mid-1982, assuming all remaining permits and approvals are timely obtained. Thereafter, initial production and coal removal is expected to commence by January 1, 1984.

North Antelope Coal Company is proposing to mine five million tons of coal per year for approximately 39 years. Extensive studies, design, and consultation with State and Federal officials were incorporated into a plan that complies with all applicable laws and regulations and addresses the environmental issues raised in baseline studies. Following is a brief summary of the issues raised in the baseline studies and the steps taken to address them.

General

North Antelope Coal Company is an unincorporated joint venture partnership created under the Wyoming Uniform Partnership Act between Powder River Coal Company, a wholly owned subsidiary of Peabody Holding Company, Inc., and Pan Eastern Coal Company, a wholly owned subsidiary of Panhandle Eastern Corporation. Peabody Coal Company, acting through its Rocky Mountain Division, has been designated as the Manager of North Antelope Coal Company.

The North Antelope reserves have been dedicated through a 1976 Coal Supply Agreement to Systems Fuels, Inc., the corporate entity charged with procuring fuel for the operating companies of Middle South Utilities, Inc., including Arkansas Power and Light Company, for use at AP&L's Independence Plant in Arkansas. Under the long-term Agreement, North Antelope is committed to provide five millions tons of coal per year to Systems Fuels, Inc.

Land Use

The North Antelope Mine area is currently used mainly as rangeland for grazing by sheep, cattle, and wildlife. Minor historic uses include oil and gas exploration and hunting.

History and Archaeology

Historical surveys for the project indicate uses of the North Antelope Mine area solely by ranchers and sheepherders. The only historical sites found were sheepherder camps.

According to studies conducted by the Office of the Wyoming State Archaeologist from 1974 to 1980, prehistoric (archaeological) finds included evidence of transient American Indian utilization of the North Antelope Mine area. Artifacts and evidence found include arrowheads, grinding stones, tipi "rings", and fire pits. In all, sixteen sites were found and recorded in the Permit Area in six years of field investigation. Of these, four will require additional investigation in order to determine their National Register Status. One site has been declared eligible for nomination to the National Historic Register and will require mitigation before clearance can be recommended. All other sites have been determined not to be eligible for nomination.

In order further to define the cultural resources of the permit area and help the various agencies to execute their respective responsibilities under the provisions of historic preservation legislation., North Antelope Coal Company retained Western Cultural Resources Management, Inc. to perform another complete study of the North Antelope Mine area. The WCRM study, which was recently completed, included an analysis of the historical and paleontological features of the area as well as an archaeological study.

Climatology

The area has a semi-arid climate with an average annual rainfall of 10 to 13 inches, fairly constant westerly prevailing winds, and extreme temperature variations.

North Antelope Coal Company maintains and operates a meteorological station inside the permit area that measures wind speed, wind direction, temperature, and precipitation. Meteorological monitoring will continue throughout the life of the mine.

Air Quality Permits to Construct were issued to North Antelope Coal Company by the Air Quality Division of the Wyoming Department of Environmental Quality and Region VIII of the U.S. Environmental Protection Agency (EPA). The voluminous applications that contain the information upon which these permits were issued are on file with the U.S. Environmental Protection Agency, Region VIII in Denver, Colorado, and with the Air Quality Division, the Wyoming Department of Environmental Quality. As a condition of the Wyoming Air Quality Permit, the "North Antelope Coal Company 'will' establish an ambient particulate monitoring program for suspended particulates acceptable to the Division prior to the initiation of stripping operations".

Modifications to the mine plan , subsequent to the above permits, have resulted in a net decrease in projected emissions from the mine. An application for an air quality permit amendment has been submitted to Wyoming DEQ/Air Quality Division to reflect these changes.

Geology

The permit area is characterized by a low relief plateau cut by steep sided washes and gullies; flat top buttes, narrow and elongate divides and local escarpments are also present. The geology of the area is one of flat lying sedimentary formations consisting of alternating lenses of sandstone, siltstone, claystone, and coal. The coal seam (named here "Roland") is a consistent bed of subbituminous coal approximately 80 to 90 feet thick.

Overburden quality at the North Antelope Mine is generally characterized by high sodium adsorption ratios and electrical conductivities, with concentrations that are scattered and unpredictable.

Hydrology

The North Antelope Mine is located entirely within the Porcupine Creek Drainage Basin which is a tributary of Antelope Creek. Tributaries of Porcupine Creek which will be temporarily disrupted by the mining operation include Payne Draw, Knapp Draw, Cindy's Draw, and Rogers Draw. Information on the flow characteristics within these basins was obtained by crest stage gages,. flumes, and theoretical predictions. In addition, surface water quality was sampled and analyzed in accordance with WDEQ/LQD guidelines.

Groundwater was also monitored intensely at the site. Over 100 wells were drilled and completed in overburden, alluvium, coal, or scoria. Monthly levels in each well and quarterly water quality samples at several wells were taken in order to obtain seasonal fluctuations. In addition, several pump tests were performed on each stratum which could be considered to be an aquifer. Finally, this information was gathered to draw basic conclusions about the hydrologic system.

In general, the surface and groundwater systems are closely related at the North Antelope Mine Site. Porcupine Creek in the northern part of the permit area, Payne Draw, Knapp Draw, Rogers Draw, and Cindy's Draw are all ephemeral in nature and convey water only in response to snowmelt or storm events. In contrast, as Porcupine Creek meanders south within the permit area toward the contact between the scoria and coal, it begins to receive discharge from the coal aquifer. At this point, the alluvial material becomes saturated and subirrigated vegetation becomes more prevalent along the creek.

Of the strata which will be disturbed by the mining operation, the coal and the alluvial material are of primary geohydrologic importance. The coal is highly fractured in the northern portion of the property and is considered to have a high water yielding capability. The saturated alluvial material also has a high water yielding capability and as mentioned earlier, does subirrigate vegetation. The quality of water from each of these aquifers is considered to be somewhat poor and marginally useful.

Soils

The soils found in the North Antelope project area are typical of soils found in semi-arid regions of the Western United States. Most of the soils found in the project area contain at least some suitable topsoil material. However, many of the soils can supply only a limited amount of topsoil as they are shallow to bedrock, become saline with depth, have high SAR values in the substratum, and/or have high clay content. All of the suitable topsoil units contain greater than 20 inches of salvageable topsoil material.

The suggested salvageable depths of topsoil material presented in this application are based on laboratory data and field observation, and represent only good and fair sources of topsoil material. It is not suggested in the Mine Permit Application that any poor or unsuitable sources of topsoil be stripped and used during reclamation activities. No prime farmland soils exist in the permit area.

Vegetation

Vegetation communities in the permit area are consistent with the regional vegetation, dominated by a grama-needlegrass-wheatgrass grassland. Shrub and tree cover are sparse; greasewood shrubs are predominant on bottomland, and plains cottonwood are found in scattered groves along major drainages. The area is currently used for grazing by livestock, with a carrying capacity of 60.8 animal units per year on the permit area.

There are no protected vegetation species found on the permit area. Noxious weeds are scattered and not found in concentrations which would indicate potential problems (high selenium, etc.).

Wildlife

Wildlife habitats correspond to the vegetation types and include greasewood, upland grass, meadow (riparian), breaks, and scoria grasslands. Big game species recorded on or near the proposed mine site include pronghorn antelope, mule deer, and white-tail deer. Raptors including golden eagles, great-horned owls, red-tailed hawks, and other hawks nest primarily in cottonwoods along Porcupine and Antelope Creeks. Aquatic habitat in the vicinity of the mine is limited, with the major aquatic habitat being Porcupine Reservoir south of the permit area.

Protected species which occur, or potentially could occur, in the area include black-footed ferrets, bald eagles, golden eagles, peregrine falcons, and whooping cranes. Ferret searches of the prairie dog towns in and near the permit area revealed no indication of the presence of black-footed ferrets. Bald eagles migrate through the area and are known to winter roost on Antelope Creek approximately three miles southeast of the permit boundary, generally feeding on winter killed sheep and antelope. No peregrine falcons or whooping cranes were observed in the area of the proposed mine.

Golden eagles actively nest in and adjacent to the permit area. North Antelope Coal Company is actively participating in a regional golden eagle study being conducted by the U.S. Fish and Wildlife Service to determine population characteristics and develop methods to lessen the effects caused by mining on golden eagles.

Alluvial Valley Floors

Within the North Antelope Mine area to be disturbed by mining, there are 132 acres which have stream laid deposits. Of these, 20 acres are supporting subirrigated or naturally flood irrigated meadow vegetation. Artificial flood irrigation from Porcupine Creek is limited to 250 acres of hay meadow south of the permit area which will not be disrupted by mining.

All of the subirrigated or naturally flood irrigated lands within the area to be disturbed are unimproved rangeland; no soils on the permit area are classified as prime farmland soils, and the subirrigated or naturally flood irrigated meadow acreage is insignificant to the total ranch production.

Mine Plan

North Antelope Coal Company will use a dragline assisted by a shovel and trucks to remove overburden. The pit progression was designed to maintain the present drainage pattern for as long as possible, and when finally necessary to mine through the major drainages, the design is such that the drainage can be temporarily relocated in an area which was mined 10 to 12 years previously. This will allow ample time for the mined and backfilled area to settle and stabilize. Also, the coal haulage system was so designed that the channels to be used in the temporary relocation of the major drainages are used as haul roads, thus compacting the bottoms of the temporary channels.

Suitable overburden stockpiles and topsoil stockpiles are located on the mine spoil wherever possible, to keep the disturbed acreage to the absolute minimum.

Porcupine Creek will be diverted around the disturbed area. Sediment control ponds are placed downstream from all disturbed areas to control the sediment and flows. A separate waste water pond has been designed to contain all of the runoff from the facilities area, so that any runoff containing oils or other contaminants will be controlled by a separate pond.

There is some undesirable material in the overburden and it appears in lenses, is widely scattered and is not contiguous. These lenses are found mostly in the 80 feet of overburden immediately above the coal seam that will be handled by the dragline. All of the material over 80 feet of overburden will be removed by truck and shovel and will be placed on top of dragline spoil or stockpiled for use later as a cover for dragline spoil. This material (a minimum of 8 feet) will be suitable as a root medium and will be placed on the dragline spoil. All disturbed areas will be graded to the final proposed topography, covered with an average of 15 inches of topsoil, and then seeded to complete the reclamation program.

The mine surface facilities, rail loop, storage silos, shops, warehouse, office, and other necessary structures are planned to be constructed in the only area near the mining activities which has no coal beneath the surface. The facilities are located as near the outcrop as possible, thus keeping the total disturbed area to a minimum.

The railroad alignment was designed to keep the disturbed area to a minimum, stay as near the steep area as possible, thus disturbing the valley as little as possible, and yet staying off the recoverable coal found in the area. The design keeps the railroad off an irrigated hay field, as far from the Porcupine Reservoir as possible, and yet a safe distance from an eagle's nest found in the area, as coordinated with WDEQ/Land Quality Division, the U.S. Fish and Wildlife Service, and the Wyoming Game and Fish Department.

When mining is completed, the facilities wil be dismantled, the area graded, topsoiled, and then seeded. The railroad will be taken up, the cuts and fills graded, topsoiled, and then seeded.

Reclamation Plan

The overall reclamation plan has been designed to restore the land to its premining potential for use by livestock and wildlife. Handling of overburden will occur so that replacement of these materials in the mined out areas will result in suitable material being located where groundwater could be affected and where it would be in conjunction with root zones. The combination of truck and shovel operations with a dragline will result in the capability to selectively handle materials and isolate either good or poor quality materials for precise placement in the backfill. When the nature and quality of overburden is borderline and where mixing of materials would solve any potential quality problems, the dragline is an excellent tool, as well as being an efficient materials mover.

Topsoils will be salvaged and stockpiled or hauled back directly to reclaimed areas. Total topsoil materials replaced will average approximately 15 inches over the entire mine site. The baseline studies defined the existing nature and extent of the soils resources. When topsoils are replaced on regraded spoil, they will be tested to insure that the nutrient levels are adequate to establish a self-sustaining vegetative cover.

Hydrologic restoration of the mine site begins with the replacement of alluvial materials in the restored stream channels By reconstructing the selected channels with alluvium and adding a flood plain designed for a 100-year frequency flood, North Antelope Coal Company is increasing potentially flood irrigated land by 20 percent (from 50 to 60 acres).

The five (5) drainages in the mining area are: Payne Draw, Cindy's Draw, Knapp Draw, Rogers Draw, and Porcupine Creek. These drainages will be rebuilt in their original locations upon the completion of mining in their respective areas. Their final locations will be given ample time to settle and stabilize.

Great care has been taken to reclaim channels to an erosionally stable state. Channel cross sections have been designed to achieve low flood flow velocities by having a large width-to-depth ratio. The channel cross section will be vegetated to increase the roughness of the cross section and thereby increase its stability. Special erosion control measures, including riprap and channel compaction, will be used on critical areas. Finally, the final impoundment (as described below) will prevent accelerated erosion on Porcupine Creek upstream and attenuate flood peaks downstream, also aiding in the stability of the reclaimed channel.

The projected postmining groundwater levels show water continuing, after mining, to discharge into the reclaimed Porcupine Creel valley. The overburden special handling capabilities of the combined truck-shovel and dragline operation assures that groundwater quality is protected from toxic forming substances in spoil and that the alluvial groundwater system will be reconstructed along the new Porcupine Creek drainageway. The proposed final impoundment is created by the mining operation. Therefore, it does not require construction of a dam. The pit will hold approximately 2,185 acre feet of water - 961 acre feet is surface storage above the groundwater table. Groundwater inflows will comprise less than 10% of the total inflow to the final impoundment. Over 90% of the lake inflow will be surface water. This will allow dilution which will ensure that the water in the impoundment will be suitable for irrigation.

The storage rights, as agreed to by the current water right holder, will be transferred from Porcupine Reservoir to the final impoundment lake. The existing Porcupine Reservoir has a current capacity of about 350 acre feet of storage due to silting over the last thirty years. The new lake will have 961 acre-feet of surface water storage for agricultural use, which will greatly enhance the life and extent of irrigable lands.

Creation of the final impoundment will have several other valuable environmental assets:

1. By leaving the final impoundment, approximately 6 million cubic yards of fill are saved, which will result in less surface disturbance and more topographic relief.

2. The surface within the high water mark will not be topsoiled, saving topsoil for use in other portions of the mine area.

3. The lake will act as a point of saturation for surrounding land which will replenish any loss of subirrigated land caused by active mining.

4. Wildlife benefits are enhanced considerably. The lake will restore surface water that is currently being lost at Porcupine Reservoir by siltation for shorebirds and waterfowl. The island in the new lake will provide habitat diversity for songbirds and waterfowl nesting. The analysis of water also indicates that a viable fishery could be developed.

After testing for stability of water quality and quantity, North Antelope Coal Company will coordinate its efforts with the Wyoming Game and Fish Department in stocking the lake with fish.

There are no other permitted mines in the vicinity of North Antelope Mine. Nevertheless, North Antelope Coal Company recognizes and to the extent presently possible, has assessed the tentative plans for mines by Northern Energy Resources Company (NERCO) and Rochelle Coal Company in the immediate vicinity. Rochelle Coal Company is committed to estimating potential cumulative impacts between North Antelope Mine and Rochelle Mine. North Antelope Mine will coordinate efforts to define probable cumulative impacts with NERCO as data becomes available.

The revegetation plan has incorporated as many native plant materials as can be assured to be commercially available. Native plants which are available on an incidental basis are included to provide a maximum species diversity. The few introduced species included in the seed mix serve functions which cannot be performed by commercially available natives. For example, alfalfa is utilized as a nitrogen fixer to help maintain topsoil in stockpiles, and smooth brome is a cool season grass which supplies good early forage, and which is a good sod former to stabilize stream channels.

The shrub and tree plantings will be at an overall density of 300/acre, but grouping of shrub plantings into islands with a density of about 1500/acre will have the following attributes:

1. Establishment of shrubs can be more easily monitored and enhanced if a site specific shrub preparation is utilized. There can be less competition from perennial grasses.

2. The dense stands of shrubs will provide cover for small mammals and habitat diversity for songbirds.

3. The open lands between shrub groupings can be more easily managed for cattle and sheep grazing.

4. The shrub islands, once established, will become seed sources for additional shrub invasion.

5. The seed mixes will include some shrub seed, which will allow occasional shrub plants to establish in the grassland areas.

Tree plantings, primarily cottonwoods and willows, will be made to maximize the tree stratum for nesting raptors. Some trees will be transplanted using a tree spade. Others will be hand planted. In any case, maximum utilization of subirrigated areas will be made with trees planted along 1) the final lake, 2) reestablished stock ponds, and 3) the reestablished drainages.

Throughout the project, wildlife considerations were made in mining and reclamation design. Of critical concern is the high concentration of active eagle nests in the vicinity of the North Antelope Mine Site. After consultation, coordination, and field visits with Wyoming Game and Fish, U.S. Fish and Wildlife Service Research Branch, Wyoming Coal Coordinator, and Law Enforcement District, three major steps have been taken to lessen the potential effects of mining on these golden eagle nests:

1. The railspur near the nest in Section 21, R70W, T40N was moved as far away from the nest as possible without infringing on the active Porcupine Creek drainage.

2. Construction of the railspur in the vicinity of the nest will be scheduled to minimize disturbance during the nesting season.

3. North Antelope Coal Company was involved in initiating talks with USFWS and Wyoming Game and Fish in establishing a region-wide study of methods which could mitigate future impacts caused by mining on the golden eagle populations. North Antelope Coal Company is continuing to support this study (along with other companies) by providing access permission, study direction coordination, and funds.

The winter bald eagle roost located approximately three miles south and east of the North Antelope Mine will be monitored to determine any potential conflicts. Other

monitoring and mitigation programs devoted to wildlife include monitoring prairie dog towns in the mine vicinity for black-footed ferret signs, fencing during active mining in accordance with requests by USFWS, Wyoming Game and Fish and U.S. Forest Service to minimize disturbance to antelope migration, planting less palatable species along roads and railroads to minimize attraction of animals to high traffic areas, and establishment of rock piles on the final reclaimed surface to supply additional microhabitat diversity and additional raptor perching sites.

Construction

The construction of the North Antelope Coal Mine will include:

1. coal conveying and crushing facilities;

2. three 15,000 ton capacity coal storage silos;

3. load-out and weighing-sampling system;

4. 5.3 mile rail spur and loop to connect to the Burlington Northern main line;

5. ancillary facilities including: administrative offices, a bathhouse, a truck repair shop, a maintenance shop, and an electrical shop. Other support facilities include an access road, a transmission line, sedimentation ponds, a fresh water reservoir, a wastewater treatment system, and a fuel storage area.

During the 39-year life of the project, an estimated 190 million tons of coal will be recovered from an approximate area of 3,700 acres. The annual coal production of 5 million tons will require approximately 90,000 gallons of diesel fuel, 6,000 gallons of gasoline, and 2 million kilowatt-hours of electric power per month. Potable and industrial water use is estimated at 200,000 gallons per day.

Site Location and Description

The proposed North Antelope Mine, an open-pit coal mine, is located in southern Campbell County, 68 road miles southeast of Gillette, 31 road miles southeast of Wright, and 86 road miles northeast of Douglas. The active mine area, occupying 2,698 acres, will be located in Sections 4, 5, 8, 9, 16, and 17 of T41N, R70W.

The total permit area of 3,762 acres will have a life span of 44 years, from initial disturbance to final reclamation, though total productive life will be 39 years. If all permits are received in a timely manner, initial work on access roads will begin in mid-1982. Upon completion of mining, all facilities will be removed, and the site will be graded and revegetated.

Socioeconomic Impacts

The peak construction employment of 207 is anticipated to occur in 1983. The construction work force is expected to reside in Gillette, Wright, and Newcastle. The operating work force will begin with 56 employees in 1984, and will increase to a maximum of 165 by 1990. Due to low unemployment rates in the area of site influence, employment created by the project is expected to be filled by in-migrants to the area. Population effects associated with the North Antelppe Mine will be minimal in Campbell County, Gillette, Weston County, and Newcastle.

Population increases attributable to the project are expected to intensify demands on certain capital facilities of Wright, Newcastle, and Weston County.

The construction of the North Antelope Mine is projected to create a demand for 220 dwelling units for direct and indirect employees in Campbell County, and approximately 50 dwelling units in the Newcastle area. Housing for the peak construction work force is proposed to be provided through the pre-leasing or guaranteeing of rent on 36 mobile home spaces, 10 apartments, and 91 recreational vehicle spaces in Wright.

The impact of the North Antelope Mine on the Newcastle area is not expected to be significant. However, this project is only one of five identified coal mines in the area expected to begin or expand production in the immediate future. According to population estimates compiled by the Newcastle City Engineer, these mines cumulatively are expected to bring 1,000 more residents to the Newcastle area by 1985. None of these mines are located in Weston County, so the area will not benefit from significant increases in assessed valuation. Increased sales and use tax receipts resulting from increases in Weston County personal income may help operating budgets, but Weston

County governments will not be in an appreciably better position to finance capital facility projects as a result of these Campbell County coal mines.

Committed Socioeconomic Mitigation Measures

1. North Antelope Coal Company has committed to a mass transit program which will be investigated and tested during the construction phase if feasible.
2. North Antelope has committed to an employee housing assistance program.
3. North Antelope has committed to widen and improve several miles of existing public county roads in Campbell County and to construct and upgrade private access roads into the mine site.
4. North Antelope has established payroll accounts and a general disbursement account during the pre-construction, construction, and operating phases in Gillette.
5. North Antelope has already provided Gillette with a $150,000 grant for design studies for a new sewage treatment facility.
6. North Antelope acquired an option to purchase approximately 154 acres in Gillette in the hopes of stimulating housing development through land ownership.
7. North Antelope will participate in the funding of a study in capital shortage problems facing Wyoming banking institutions.
8. North Antelope will pre-lease or cause to be built various mobil home spaces, apartments, and recreational vehicle pads in Gillette and Wright, Wyoming.

These and other commitments have been agreed to as a condition of granting a permit to North Antelope by the Wyoming Industrial Siting Council.

Status of Existing or Pending Permits

In addition to the air quality permits to construct described above under "Climatalogy", North Antelope Coal Company has also obtained a permit from the Wyoming Industrial Siting Council, pursuant to a hearing held in Gillette, Wyoming, on June 16, 1981, the record of which is referred to as Docket No. 81-1 before the Wyoming Industrial Siting Council and which is incorporated herein by reference. Furthermore, attached hereto and incorporated herein by reference is the document entitled "Staff Review of the Permit Application for North Antelope Coal Company to Construct the North Antelope Coal Mine, Campbell County, Wyoming, May, 1981, Docket No. WISA-81-1", which describes in considerable detail: the facility, site location and description, site design and components, nature of operation, status of permits and approvals, area site influence in relation to other activities, alternatives, affected environment, climate and air quality, geology and soils, water quality and supply, land use, vegetation and wildlife, recreation and visual resources, cultural resources, social profile, current area economy, projected future economy (without NACC), area population, capital facilities, housing, transportation, educational facilities, government and public finance, environmental impacts of construction and operation, effects on air quality, effects on water resources, effects on land use, effects on vegetation and wildlife, effects on recreational and visual resources, effects on cultural resources, cumulative regional impacts, impact controls, mitigation measures and recommendations, socioeconomic impacts of construction and operation, construction schedule and estimated construction costs, economic effects of the project, population, capital facilities, housing, transportation, educational facilities, government and public finance, impact controls, mitigating measures, and recommendations, monitoring programs, monitoring of environmental effects, monitoring of socioeconomic conditions, and reporting schedules.

Reference is also made to the Mine Permit Application filed with the Wyoming Department of Environmental Quality, Land Quality Division, and the United States Office of Surface Mining Reclamation and Enforcement on May 3, 1981 for the proposed North Antelope Mine. Such Mine Permit Application is available for public inspection in the Wyoming Department of Environmental Quality, Land Quality Division, offices in Cheyenne, Wyoming, as well as the offices of the Office of Surface Mining, Region V in

Denver, Colorado. The contents of the Application and all related correspondence related thereto is incorporated herein by reference.

North Antelope Coal Company has also applied for and in most cases obtained a substantial number of lesser permits which are generally described in the above mentioned Mine Permit Application.

Conclusion

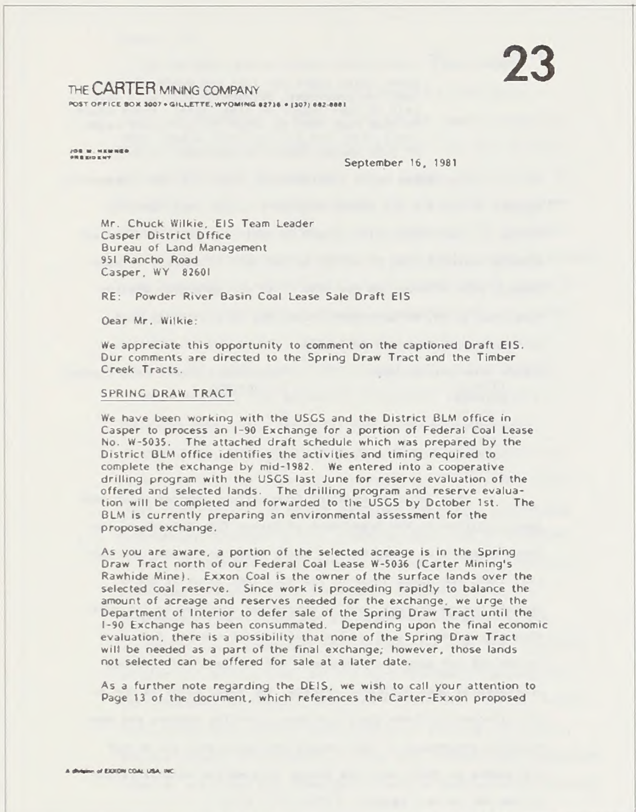
The North Antelope Mine has been designed to address and mitigate as many of the physical, environmental, biological, and socioeconomic impacts associated with the project as possible.

Because of its advanced stage of planning, we contend that the final draft Powder River Regional Coal Environmental Impact Statement should specifically recognize, describe, and identify the proposed North Antelope Mine.

Sincerely yours,

Terry O'Connor, Director
Legal and Governmental Affairs

TLO:sj
Att.



23

THE CARTER MINING COMPANY
POST OFFICE BOX 3007 • GILLETTE, WYOMING 82716 • (307) 682-8881

JOE W. HAMNER
PRESIDENT

September 16, 1981

Mr. Chuck Wilkie, EIS Team Leader
Casper District Office
Bureau of Land Management
951 Rancho Road
Casper, WY 82601

RE: Powder River Basin Coal Lease Sale Draft EIS

Dear Mr. Wilkie:

We appreciate this opportunity to comment on the captioned Draft EIS. Our comments are directed to the Spring Draw Tract and the Timber Creek Tracts.

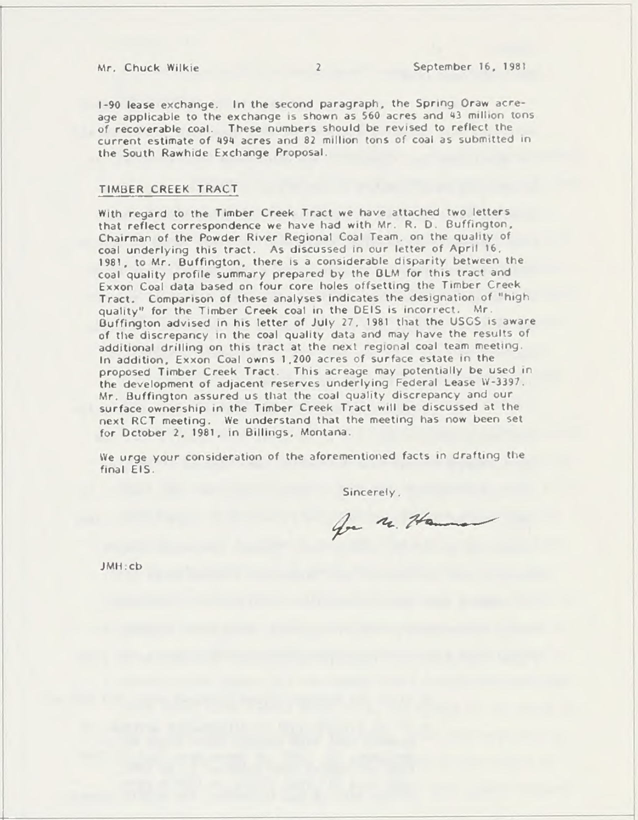
SPRING DRAW TRACT

We have been working with the USGS and the District BLM office in Casper to process an I-90 Exchange for a portion of Federal Coal Lease No. W-5035. The attached draft schedule which was prepared by the District BLM office identifies the activities and timing required to complete the exchange by mid-1982. We entered into a cooperative drilling program with the USGS last June for reserve evaluation of the offered and selected lands. The drilling program and reserve evaluation will be completed and forwarded to the USGS by October 1st. The BLM is currently preparing an environmental assessment for the proposed exchange.

As you are aware, a portion of the selected acreage is in the Spring Draw Tract north of our Federal Coal Lease W-5036 (Carter Mining's Rawhide Mine). Exxon Coal is the owner of the surface lands over the selected coal reserve. Since work is proceeding rapidly to balance the amount of acreage and reserves needed for the exchange, we urge the Department of Interior to defer sale of the Spring Draw Tract until the I-90 Exchange has been consummated. Depending upon the final economic evaluation, there is a possibility that none of the Spring Draw Tract will be needed as a part of the final exchange; however, those lands not selected can be offered for sale at a later date.

As a further note regarding the DEIS, we wish to call your attention to Page 13 of the document, which references the Carter-Exxon proposed

A division of EXXON COAL USA, INC.



Mr. Chuck Wilkie 2 September 16, 1981

I-90 lease exchange. In the second paragraph, the Spring Draw acreage applicable to the exchange is shown as 560 acres and 43 million tons of recoverable coal. These numbers should be revised to reflect the current estimate of 494 acres and 82 million tons of coal as submitted in the South Rawhide Exchange Proposal.

TIMBER CREEK TRACT

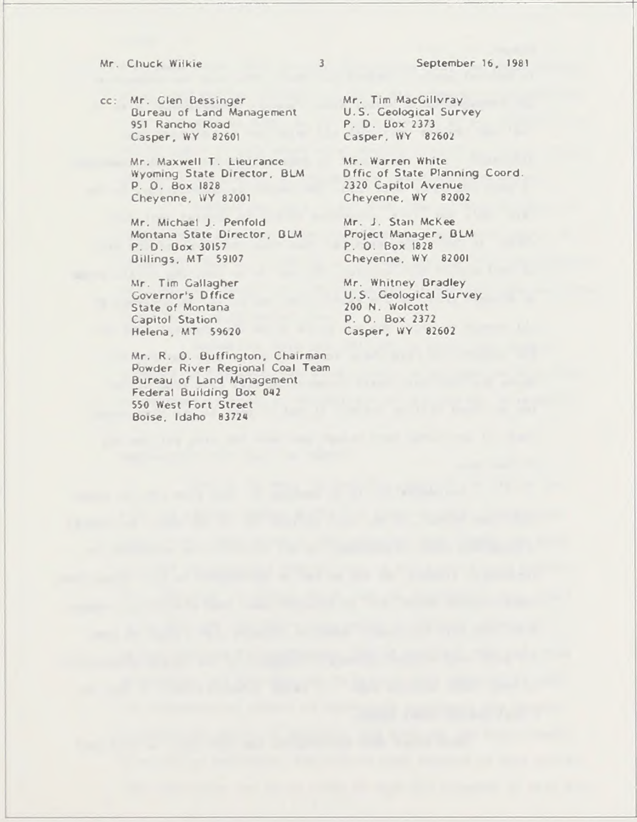
With regard to the Timber Creek Tract we have attached two letters that reflect correspondence we have had with Mr. R. D. Buffington, Chairman of the Powder River Regional Coal Team, on the quality of coal underlying this tract. As discussed in our letter of April 16, 1981, to Mr. Buffington, there is a considerable disparity between the coal quality profile summary prepared by the BLM for this tract and Exxon Coal data based on four core holes offsetting the Timber Creek Tract. Comparison of these analyses indicates the designation of "high quality" for the Timber Creek coal in the DEIS is incorrect. Mr. Buffington advised in his letter of July 27, 1981 that the USGS is aware of the discrepancy in the coal quality data and may have the results of additional drilling on this tract at the next regional coal team meeting. In addition, Exxon Coal owns 1,200 acres of surface estate in the proposed Timber Creek Tract. This acreage may potentially be used in the development of adjacent reserves underlying Federal Lease W-3397. Mr. Buffington assured us that the coal quality discrepancy and our surface ownership in the Timber Creek Tract will be discussed at the next RCT meeting. We understand that the meeting has now been set for October 2, 1981, in Billings, Montana.

We urge your consideration of the aforementioned facts in drafting the final EIS.

Sincerely,

Joe W. Hamner

JMH:cb



Mr. Chuck Wilkie 3 September 16, 1981

cc: Mr. Glen Bessinger
Bureau of Land Management
951 Rancho Road
Casper, WY 82601

Mr. Maxwell T. Lieurance
Wyoming State Director, BLM
P. O. Box 1828
Cheyenne, WY 82001

Mr. Michael J. Penfold
Montana State Director, BLM
P. O. Box 30157
Billings, MT 59107

Mr. Tim Gallagher
Governor's Office
State of Montana
Capitol Station
Helena, MT 59620

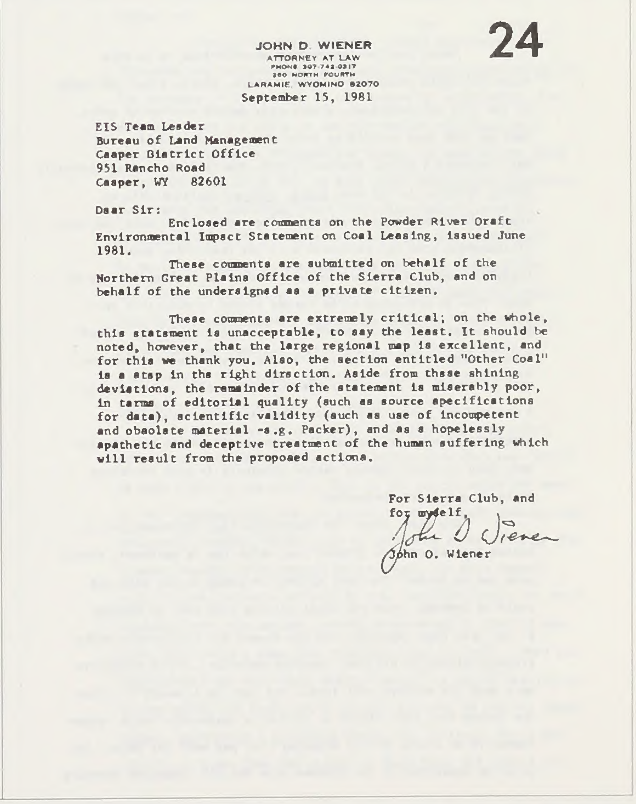
Mr. R. D. Buffington, Chairman
Powder River Regional Coal Team
Bureau of Land Management
Federal Building Box 042
550 West Fort Street
Boise, Idaho 83724

Mr. Tim MacGillvray
U.S. Geological Survey
P. O. Box 2373
Casper, WY 82602

Mr. Warren White
Office of State Planning Coord.
2320 Capitol Avenue
Cheyenne, WY 82002

Mr. J. Stan McKee
Project Manager, BLM
P. O. Box 1828
Cheyenne, WY 82001

Mr. Whitney Bradley
U.S. Geological Survey
200 N. Wolcott
P. O. Box 2372
Casper, WY 82602



24

JOHN D. WIENER
ATTORNEY AT LAW
PHONE 307-742-0317
260 NORTH FOURTH
LARAMIE, WYOMING 82070

September 15, 1981

EIS Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, WY 82601

Dear Sir:

Enclosed are comments on the Powder River Draft Environmental Impact Statement on Coal Leasing, issued June 1981.

These comments are submitted on behalf of the Northern Great Plains Office of the Sierra Club, and on behalf of the undersigned as a private citizen.

These comments are extremely critical; on the whole, this statement is unacceptable, to say the least. It should be noted, however, that the large regional map is excellent, and for this we thank you. Also, the section entitled "Other Coal" is a step in the right direction. Aside from these shining deviations, the remainder of the statement is miserably poor, in terms of editorial quality (such as source specifications for data), scientific validity (such as use of incompetent and obsolete material -e.g. Packer), and as a hopelessly apathetic and deceptive treatment of the human suffering which will result from the proposed actions.

For Sierra Club, and
for myself,
John D Wiener
John D. Wiener

WHY LEASE MORE COAL?

Friends of the Earth and the Sierra Club have already submitted very detailed analyses of this question. Unfortunately, the public was not allowed by the BLM to see this material, as it was considered somehow not relevant to coal leasing. That material was contained in comments on the Green River - Ham's Fork Regional Coal Leasing, which was the first round of leasing under the new program. It seems likely that BLM will not allow this material to be made available for free, but it is part of the official record, and can be seen or requested at the Craig District Office, P.O. Box 248, Craig, Colorado 81625 (455 Emerson Street), in care of Mr. Dan Martin.

In the hope that BLM will not prevent this information from being made public, let it be noted here briefly that two major considerations have apparently been ignored. First, at the rate of use of coal from federal leases, any new leasing is very hard to justify. As we have said so many times before, (see Friends of the Earth, Sierra Club, Natural Resources Defense Council, etc. in Federal Coal Management Program Final EIS), the numbers make leasing look very peculiar. The most recent report to Congress on the Federal Coal Management Program, for Fiscal Year 1980, (as required by law), reveals that in FY 1980

* 99 of 562 Federal leases produced coal; 463 did not.

* 17,261 BILLION TONS of RECOVERABLE RESERVES OF FEDERAL COAL WERE ALREADY UNDER LEASE as of September 30, 1980. As there were 71.9 million tons of federal coal produced in FY 1980, that is a 240 YEAR SUPPLY at 1980's rate. If the rate of use increases, the supply already under lease might not last the whole of the next two centuries. Perhaps it will only last half of that length of time. Still, there would be some time left in which to hold lease sales... (Pp.1, A-4, and A-7, op. cit. supra, FCMP FY 1980 Annual Report to Congress, by DOI.)

The second major consideration which has been apparently ignored by BLM and its figure-suppliers in the Department of Energy is that electricity demand is still tapering off, and not growing anywhere near as wildly as has been intimated. Persons seeking more information can find it in the materials already submitted by us, as mentioned above, but to put things in a nut-shell, consider the following:

Change from year-to-year	Electricity Growth Rate (sales)
1973-74	0.4 percent
1974-75	2.7
1975-76	6.3
1976-77	4.3
1977-78	3.9
1978-79	2.1
1979-80	1.1

This table is compiled from various sources which have been published by the Department of Energy (See Friends of the Earth comments on Green River - Ham's Fork, pp. 9-10A, and for 1979-1980, see pages 65-66 of the July 1981 issue of DOE's Monthly Energy Review), and is simplified somewhat by the omission of a great deal of qualification which results from need to use DOE raw data, as published, and the fact that DOE has consistently used different formats. The basic point is not at all affected by these qualifications. Doubting readers are most heartily encouraged to take pencil and calculator and attack the morass on their own; the Energy Information Administration of the DOE is very helpful. (202-252-8800).

There are two interesting observations to be made about the table presented on page 2 above. First, after the shock of the 1973 oil embargoes, electricity demand started to swing back up, and then started to swing down very forcefully, and has continued a strong downward trend. The Harvard Business School's Energy Project, in the book Energy Future, explains this as simply the common-sense working of free enterprise: when the cost of something goes up, consumers will use that thing more efficiently. What we see is simply conservation - using less to do more. This is not going to be turned around by political appointees carrying out instructions to lease everything, regardless of demand. The second interesting observation is that the rate of growth in electricity demand before 1973 was basically 7 percent per year - which means doubling in a decade. That nightmare of ever greater mindless geometric growth has finally been laid to rest, despite vested interests in such cancerous waste of our finite resources.

Why then, shown the incredibly high disproportion of leased federal coal to federal coal which can be marketed, should more now be leased? The best motivation seems to lie with the would-be lessors. With the mines sitting idle now, or working at far less than capacity, and the demand for electricity being strongly slowed by rational economic behavior, no one would pay very much for another coal lease. And that is a reason to offer the leases now: they cannot be sold at a reasonable value, since demand is so slack. No one drowning will pay much for water. The Interior department's own figures show the oil companies drowning in federal coal. It stands to reason that amid the clamorous and propagandistic noises about "energy independence" - as if coal can replace very much oil which has not already been displaced - that there must be some motivation for the companies to make DOI offer this coal. The reason is speculation. In the late '60's and '70's, companies picked up federal coal dirt cheap. In fact, they paid far less than the value of the dirt as real estate for ranching. Why not do so now? The public seems to support this, to the extent that the public is informed at all enough to care. Why not stock up on the cheapest coal in the country, in case there turns out to be some use for it? Maybe the Synthetic Fuels Corporation will give some of the two or three billion dollars it has to you, to use that cheap coal, if you lobby hard enough and wave the flag all the way to the bank.

Incidentally, it is amusing to note that DOE has never given the public, in any coal related EIS in the West, any actual information about replacement of oil by coal. The potential is strikingly limited, as far as can be determined by this researcher. Inane figures which fail to separate peak load electricity demand from base load are simply evasive, because coal cannot be used for peak load without extensive transfer of the unused electricity to some other service area - it takes literally days to fire up a coal-fueled power plant.

What other than speculation can this coal be used for?

THE ULTIMATE SOCIAL IMPACT MITIGATION - NONEXISTENCE

This EIS has accomplished something remarkable: a giant step backwards in dealing with social impacts. Numerous groups sent representatives to the regional coal team to tell BLM that they were worried (see, e.g., Casper Star-Tribune, May 30, 1980, p. B-1) - and its a shame that they used their meager resources to make the effort. In this statement, the problems of the aged and the rural population don't exist. Small businesses being displaced by chains don't exist. Elderly people unable to cope with terrible local inflation - "mineflation" - on top of national inflation don't exist. In fact, mineflation doesn't exist at all. Agricultural labor losses don't exist. NOWHERE IS THERE ADMITTED THAT INCREASED POPULATIONS BRING GREATER INCREASES than simply the additional proportion of people IN ALCOHOLISM, DRUG ABUSE, DIVORCE, JUVENILE DELINQUENCY, and on and on. See; for instance, Little, R.L., "Energy Boom Towns: Views from Within," in Native Americans and Energy Development Anthropology Resource Center, Cambridge Mass., 1978, Jorgensen et al., and see U.S. Civil Service Commission, "Energy Resource Development: Implications for Women and Minorities in the Intermountain West", and see any reference librarian at any university for a great deal more information than BLM is willing to give the public; also, the Old West Regional Commission of the Department of Commerce supplied a great deal of data, before being essentially laid to rest (Stapleton Building, Billings), and see Friends of the Earth in Final EIS, Federal Coal Management Program, and Final EIS, Coal Development in South-central Wyoming,

and the above-mentioned suppressed comments on Green River - Ham's Fork.

RECLAMATION BY ORDERS OF THE GOVERNMENT - ALL IT TAKES IS ORDERS

Perhaps the most utterly fraudulent and insulting part of the statement is the ridiculous reliance on Paul Packer's 1974 pamphlet. AS A DIRECT QUESTION, HAS ANYONE CONNECTED WITH THE PREPARATION OF THIS EIS ACTUALLY READ ALL THE WAY THROUGH PACKER'S THIRTY-SIX PAGE PAMPHLET? HAVE YOU RUN ACROSS ANYTHING MORE RECENT? As we said in the FEIS on Federal Coal Management Program, (see p. K-111 et. seq.), Packer had a maximum of 7 growing seasons on lands which were being manipulated in ways that were not known to Packer, and on lands whose previous nature was never studied. The National Academy of Sciences study, severely attacked as being too easy-going in several areas, has never been admitted by BLM to have any significance - but it is just as old as Packer's 1974 pamphlet. Perhaps the Academy is ignored because it doesn't conclude that all strip-mined land can be restored within 15 years, but rather that it may take decades, or centuries in some cases. There are a vast number of scientific articles, books, treatises, manuals, and reports on the subject of reclamation which have come out since Packer's abused little paper. And the simple truth is that everyone who cares about these issues knows this. How stupid do you think we really are? Because ranchers are quiet, does that mean they're unable to see what is going on? You address a major field of research with one ridiculous little report that itself doesn't

even make sense. This is just like saying that the whole controversy over whether radiation is safe was answered by a guest on a TV talk show in 1968, so you don't have to do any research now. All it takes to make money as a rancher is profits, right? That's the level and quality of explanatory value you have reached.

Readers who want to get some idea of what is going on can get help from any university library; especially useful is SEAMALERT. That is a listing of current articles and publications on subjects relevant to surface mining; it has just come out with Issue Number 2 of Volume Five.

Meanwhile, does the BLM wish to claim that anyone, anywhere in the West, has gotten back his reclamation bond from a government agency, in recognition of "successful reclamation"?

INFORMATION FROM MARS? OR WHERE?

One of the most interesting items in the EIS is the level of claimed future production from the PRLAs (preference right lease applications). What provided many laughs for those who have investigated this subject is the grand future success that BLM seems to assume. Where did the information come from? As is the case throughout this poorly documented mish-mash of generalizations and oversights, BLM is credited. Who made this information up? All that can be said by this observer is that the Congressional Office of Technology Assessment has finally studied this matter in specific, and although the final report is still not published, BLM will be very pleased to have gotten this far before the facts catch up with the nonsense in this EIS.

Through out the statement, tables are presented as rationale for statements with utterly inadequate description of the contents of the tables or the sources of information. For example, Table 2-1 fails to specify whether the PRLAs are actually included in the baseline figure, or some of the PRLAs as specified in Table 2-2, or some other possibility. Supposing that Table 2-2 specifies which PRLAs BLM expects to be in production by 1990, is there any source for that suspicion? It would be amusing to see the basis for that table, since the Office of Technology Assessment's expert panel (of which this writer was a member) found that less than half of BLM's projection was remotely possible for 1990. Sadly, BLM's wierd approach to PRLAs - undocumented, unattributed, and textually unspecified - is typical of this EIS.

One aspect of this sort of unspecified comparison, as a tactic for making things look better than they are, should be made plain to the public. This is the tactic which was used in the "programmatic" EIS, on adoption of the whole Federal Coal Management Program: to wit, use of reference areas so large that impacts dwindle into insignificance. Here, the best example might be the statement on page 20 that municipal water use would increase under the maximum leasing alternative by about 8 percent. That doesn't seem like very much, and it isn't - when you realize that the only place where "region" is really spelled out is the map at the back. The 8 percent increase is for the whole region, apparently - including Casper and Billings. Where the outflow of water from the region is specified, its only a tiny

Wiener, -9-

little fraction of the drainage of the North Platte and Yellowstone rivers that will be affected. Isn't it a shame that any single little area may have to bear a somehow higher rate of change? Conversely, why not just note that this leasing, and all you poor members of the public, are probably not a very big deal in the whole of God's infinite universe, and thereby conclude that there is no need for any EIS at all?

25

September 14, 1981

Bureau of Land Management
Att: Charles Wilkie
951 Rancho Road
Casper, Wyoming 82601

Dear Sir:

The following comments pertain to the Powder River Draft Environmental Impact Statement - Coal dated July 1981.

The general inadequacy of the statement is noted with numerous discrepancies throughout.

There is no justification of [illegible] sale of the size contemplated in this EIS. No comment is made of the existing mines producing at half capacity, or existing over-capacity and past over leasing already going on.

SOCIAL IMPACTS

There seems to be a discrepancy in information regarding coal related employment and population. Assuming the 60% figure for Rosebud County and assuming an employee has a family of four as far as population is concerned, it would appear that the figure shown on page 64 of 1,200 increase for Ashland would be erroneous.

This report has completely overlooked the initial cost of building new schools, roads, sewer and water treatment plants, etc. The report is covering 1990 when everything is at an operating and maintenance level. School funding is not discussed and Federal 874 money will be cut within three years - 1984. An example would be a father working on a federal lease with children in school in Ashland.

AIR QUALITY

It's nice each mine has a one mile diameter plastic bubble covering it and the rest of the area will not be effected by particulate matter.

TRANSPORTATION

The preparer has completely ignored impacts of the proposed Tongue River Railroad. This is not an existing railroad and in fact is not a railroad

---

Bureau of Land Management - September 14, 1981 - Page 2

yet, nor is it assured of becoming one. It is noted throughout the report that this has been overlooked.

It is felt that some background should have been given regarding the feasability of this railroad and the fact that it cannot be operated without additional leasing. Impacts caused not only with train numbers and right of way but also in terms of agricultural economy that is destroyed or reduced with railroads bisecting farms and ranches should have been addressed in this report. Land production projections have not been considered.

What transpires when Tongue River Railroad fails to get their permits?

No mention is made of the impact the land owners in the outer areas of the mines will be burdened with. The preparer must assume all landowners will receive royalties!

In every area there seems to be omissions or lack of perception to the total problem. In my opinion this EIS statement is unacceptable in its present form.

Sincerely,

Herb Mobley
Vice President
Tongue River Agricultural
Protection Association

NATIONAL WILDLIFE FEDERATION

26

ROBERT J. GOLTEN
COUNSEL

NATURAL RESOURCE CLINIC
FLEMING LAW BUILDING
BOULDER COLORADO 80309
303/492 6552

16 September 1981

EIS Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, WY 82601

Gentlepersons:

On behalf of the National Wildlife Federation, we are pleased to comment on the BLM's Draft Environmental Impact Statement (DEIS) on Powder River Coal Leasing. The National Wildlife Federation, America's largest private conservation organization, has, with its affiliates, over 4.6 million members and supporters. The Federation is devoted to the wise use, conservation, and protection of the nation's resources. We also submit these comments on behalf of the Wyoming Wildlife Federation, the largest conservation organization in the State of Wyoming, with over 1500 members dedicated to the proper management and conservation of the State's natural resources.

We have three sets of concerns about this DEIS: (1) the premises upon which it was built, (2) the failure to fully identify and discuss certain important and adverse impacts, and (3) the failure to fully describe other courses of action relating to both (a) alternative leasing methods, and (b) alternative ways, other than coal-burning, of meeting end-use energy needs.

1. Our first concern is that the DEIS is based upon highly questionable assumptions as to future market demand for coal. The DEIS need analysis rests on the premise that without new leasing the DOE high-production target goal cannot be met. There is no discussion of the econometric model or the data that the DOE used in arriving at this target goal. Instead, we are presented with an unexplained, and highly questionable, administrative edict which provides a basis--a shaky one, indeed--for all that follows.

The second major assumption, also dubious, is that all coal currently subject to Preference Right Lease Applications and existing leases will be fully developed. This ignores the fact

100% reclaimed paper

EIS Team Leader
Page 2
16 September 1981

that many of the deposits may not be economically exploitable due to high transportation or extraction costs. A proper analysis would examine the actual likelihood of full development of existing leases and PLRAs, based on projected market prices for coal and site-specific costs of extraction and transportation. If full exploitation of existing leases and PRLA lands is assumed, the three new leasing alternatives appear relatively benign, in comparison to the high-production "no action" alternative (#1). Thus, in overestimating the impact of the "no action" alternative, the DEIS blurs the contrast between the impact of stable or moderate coal development and that of massive new coal development (e.g., 50 million tons per year increased production), and may mislead the public.

2. Our second area of concern is that the DEIS fails to address adequately certain significantly-adverse impacts. First, the study fails to discuss fully the direct effects of contaminated spoil water upon wildlife and the economic effect upon pump irrigators of declines in the water table. The secondary impacts of population influx are also glossed over. Increased land area will be occupied by new residents, and increased demand for recreation will result in more poaching and more pressure on diminishing wildlife habitat.

The poaching problem is briefly mentioned, but is avoided by blithely assuming full enforcement of applicable fish and game laws. The same assumption (i.e., full enforcement) is made regarding implementation of federal and state reclamation law. At this time of budget cutbacks and retrenchment--if not retreat--for example, at the federal Office of Surface Mining, it seems unlikely that there will be the staff necessary to enforce these laws.

In addition, and significantly, the DEIS fails to deal adequately with the considerable effects of the boom-town syndrome. The BLM proposes no solution (e.g., front-end financing by the coal companies) for local budget deficits besides state or federal subsidies. There is no mention of the effect of higher housing and living costs upon persons with fixed incomes. And what happens when the coal "boom" is over--the coal reserves are exhausted--and the "bust" comes along? What happens then to the quality of what used to be a range-and-rural environment but has been converted into a largely (and ephemerally) coal-dominated economy for some 20-30 years? The DEIS ignores that serious issue. The impact of population growth will also be felt through increased fencing of open range. (This new fencing can result in wide-spread starvation of antelope during migration.)

EIS Team Leader
Page 3
16 September 1981

Finally, the study fails to treat the end-use impacts (e.g., air pollution) of burning the mined coal.

3. Our third area of concern with the DEIS is its failure to comply with section 102(2)(E) of the National Environmental Policy Act (NEPA), which mandates that the agency shall study, develop, and describe appropriate alternatives. The C.E.Q. regulations at 40 C.F.R. 1502.14 require that the agency "rigorously explore and evaluate all reasonable alternatives," and that it include appropriate mitigation measures in the proposed action. The DEIS does not mention alternative electric (e.g., renewable) power generation methods or energy conservation measures by power consumers, both of which would mitigate the supposed need for accelerated leasing; nor is there adequate discussion of alternative leasing approaches. For example, the study should explore the possibilities of maintenance leasing of existing tracts, augmented perhaps by break-through leasing (which offers a means of facilitating extraction where unleased federal coal stands in the path of efficient recovery). Land trading can also be used to mitigate mining impacts, by shifting extraction to less sensitive areas. Finally, a phased-in leasing schedule with periodic review of leases and needs offers time in which to make an informed decision. For one thing, the Department of the Interior is expected to rule on the status of PRLAs starting next year and continuing through 1984. DOI's PRLA review will provide more accurate information on which to base a need analysis.

In short, as written, the DEIS fails to discuss a wide variety of leasing options. Instead, it examines only three alternatives--all involving significant new leasing--and one "no action" alternative which assumes that, instead of new leasing, existing leases and PRLAs will be fully developed. A one-time, all-or-nothing disposition of new leases in 1982 is proposed.

It seems to us that an optimal approach, one certainly worth at least identifying and discussing, is a phased-in leasing schedule punctuated by periodic review, and which would accommodate next year's Interior Department evaluation of outstanding PRLA applications prior to further leasing.

In summary, it is our view that unwarranted assumptions in the DEIS, failure to fully disclose important environmental impacts, and disregard of not only plausible, but more sensible, leasing alternatives combine to compromise the integrity and usefulness of the EIS, and wrongly present to the public only the issue of how much--rather than if of when--new leasing should be allowed. It probably should be redrafted.

EIS Team Leader
Page 4
16 September 1981

Very truly yours,

Richard Cauble
Legal Intern

dh

cc: Rod Doty, President, Wyoming Wildlife Federation
Ron Smith, Issues Chair, Wyoming Wildlife Federation
George Kaminski, Regional Executive, NWF

27

WYOMING
EXECUTIVE DEPARTMENT
CHEYENNE

ED HERSCHLER
GOVERNOR

September 15, 1981

Mr. Charles Wilkie
Team Leader
Bureau of Land Management
951 Rancho Road
Casper, WY 82601

Dear Mr. Wilkie:

This office and several state agencies have reviewed the Draft Environmental Impact Statement for coal leasing in the Powder River Coal Basin, and comments are enclosed.

The DEIS appears to have covered most of the essential subject areas that would be impacted by federal coal leasing. However, several points need to be specifically addressed. They are:

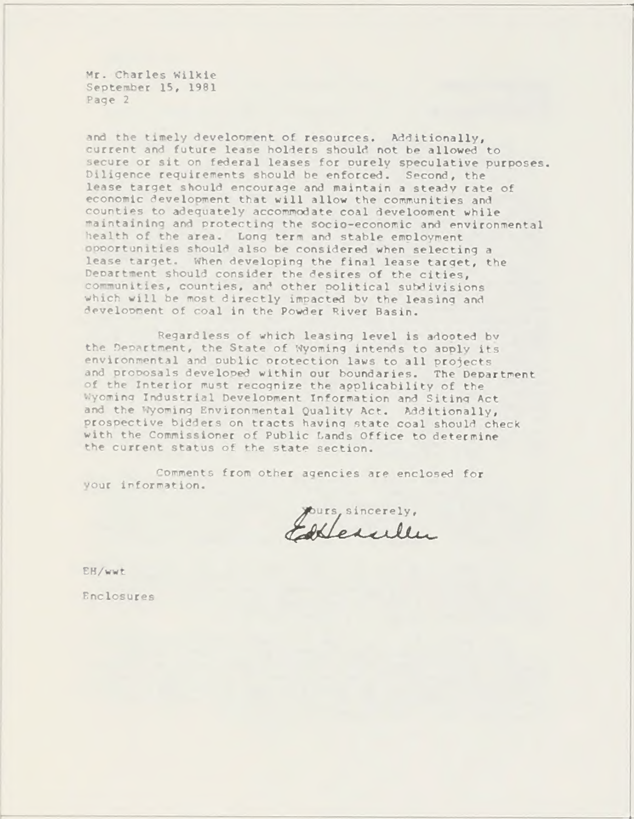
1. The Regional Coal Team did not develop nor recommend a preferred leasing alternative as suggested on page 21;

2. It is extremely doubtful that coal production levels portrayed on Table 2-2 (pages 25-28) will be realized in the time frames indicated on the table; and

3. 1980 data should be used when possible, especially on Table 3-8 (page 49). This would present a much more accurate picture of the current situation.

The Department of the Interior has adopted an interim leasing target based on input from the Regional Coal Team. Some of the assumptions used by the Regional Coal Team have changed, specifically the possibility of a large synthetic fuels industry. Considering the Administration's proposed budget cuts, absence of a Synthetic Fuels Corporation Board, and the high risk capital requirements for a synthetic fuels project, it seems doubtful that some of the impacts originally envisioned will come to pass in the next decade.

If the Department opts for a higher leasing target, the target should be designed to encourage economic competition



Mr. Charles Wilkie
September 15, 1981
Page 2

and the timely development of resources. Additionally, current and future lease holders should not be allowed to secure or sit on federal leases for purely speculative purposes. Diligence requirements should be enforced. Second, the lease target should encourage and maintain a steady rate of economic development that will allow the communities and counties to adequately accommodate coal development while maintaining and protecting the socio-economic and environmental health of the area. Long term and stable employment opportunities should also be considered when selecting a lease target. When developing the final lease target, the Department should consider the desires of the cities, communities, counties, and other political subdivisions which will be most directly impacted by the leasing and development of coal in the Powder River Basin.

Regardless of which leasing level is adopted by the Department, the State of Wyoming intends to apply its environmental and public protection laws to all projects and proposals developed within our boundaries. The Department of the Interior must recognize the applicability of the Wyoming Industrial Development Information and Siting Act and the Wyoming Environmental Quality Act. Additionally, prospective bidders on tracts having state coal should check with the Commissioner of Public Lands Office to determine the current status of the state section.

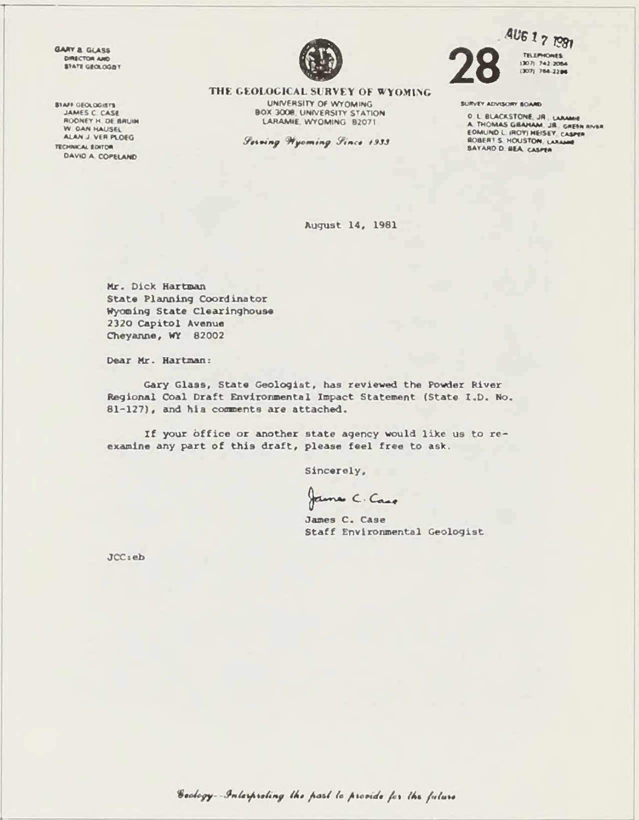
Comments from other agencies are enclosed for your information.

Yours sincerely,

Ed Herschler

EH/wwt

Enclosures



GARY B. GLASS
DIRECTOR AND
STATE GEOLOGIST

STAFF GEOLOGISTS
JAMES C. CASE
RODNEY H. DE BRUIN
W. DAN HAUSEL
ALAN J. VER PLOEG
TECHNICAL EDITOR
DAVID A. COPELAND

THE GEOLOGICAL SURVEY OF WYOMING
UNIVERSITY OF WYOMING
BOX 3008, UNIVERSITY STATION
LARAMIE, WYOMING 82071

Serving Wyoming Since 1933

TELEPHONES
(307) 742-2054
(307) 766-2286

SURVEY ADVISORY BOARD
D. L. BLACKSTONE, JR., LARAMIE
A. THOMAS GRAHAM, JR., GREEN RIVER
EDMUND L. (ROY) HEISEY, CASPER
ROBERT S. HOUSTON, LARAMIE
BAYARD D. REA, CASPER

AUG 17 1981

28

August 14, 1981

Mr. Dick Hartman
State Planning Coordinator
Wyoming State Clearinghouse
2320 Capitol Avenue
Cheyanne, WY 82002

Dear Mr. Hartman:

Gary Glass, State Geologist, has reviewed the Powder River Regional Coal Draft Environmental Impact Statement (State I.D. No. 81-127), and his comments are attached.

If your office or another state agency would like us to re-examine any part of this draft, please feel free to ask.

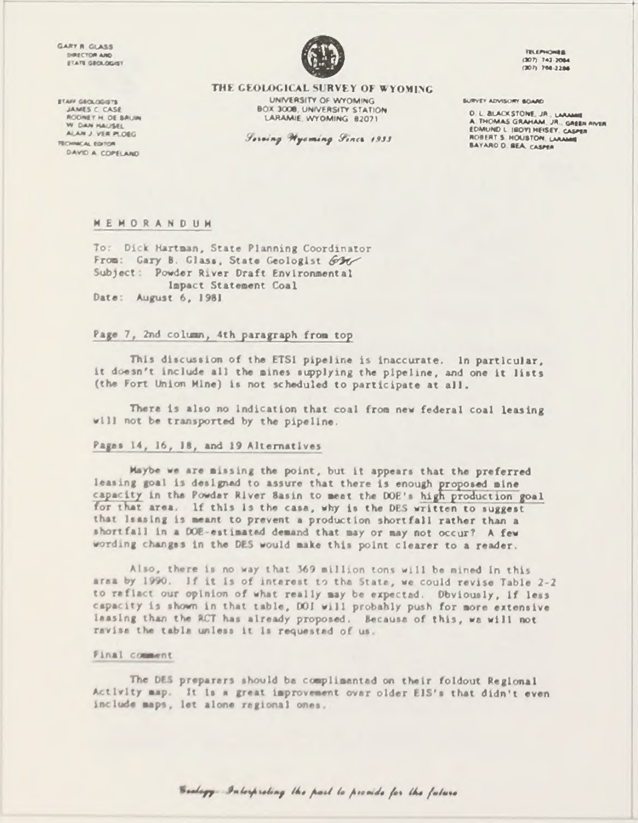
Sincerely,

James C. Case

James C. Case
Staff Environmental Geologist

JCC:eb

Geology--Interpreting the past to provide for the future



GARY B. GLASS
DIRECTOR AND
STATE GEOLOGIST

STAFF GEOLOGISTS
JAMES C. CASE
RODNEY H. DE BRUIN
W. DAN HAUSEL
ALAN J. VER PLOEG
TECHNICAL EDITOR
DAVID A. COPELAND

THE GEOLOGICAL SURVEY OF WYOMING
UNIVERSITY OF WYOMING
BOX 3008, UNIVERSITY STATION
LARAMIE, WYOMING 82071

Serving Wyoming Since 1933

TELEPHONES
(307) 742-2054
(307) 766-2286

SURVEY ADVISORY BOARD
D. L. BLACKSTONE, JR., LARAMIE
A. THOMAS GRAHAM, JR., GREEN RIVER
EDMUND L. (ROY) HEISEY, CASPER
ROBERT S. HOUSTON, LARAMIE
BAYARD D. REA, CASPER

MEMORANDUM

To: Dick Hartman, State Planning Coordinator
From: Gary B. Glass, State Geologist GBG
Subject: Powder River Draft Environmental
Impact Statement Coal
Date: August 6, 1981

Page 7, 2nd column, 4th paragraph from top

This discussion of the ETSI pipeline is inaccurate. In particular, it doesn't include all the mines supplying the pipeline, and one it lists (the Fort Union Mine) is not scheduled to participate at all.

There is also no indication that coal from new federal coal leasing will not be transported by the pipeline.

Pages 14, 16, 18, and 19 Alternatives

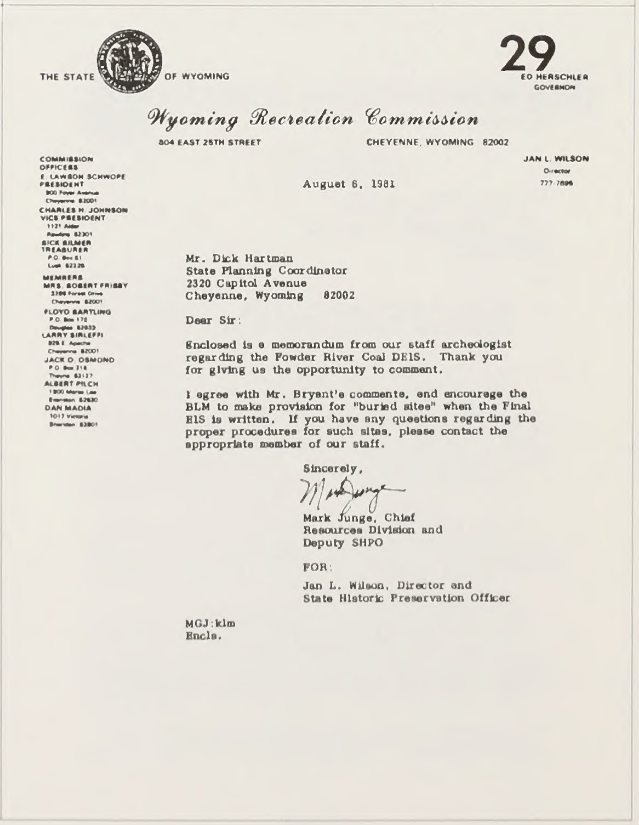
Maybe we are missing the point, but it appears that the preferred leasing goal is designed to assure that there is enough proposed mine capacity in the Powder River Basin to meet the DOE's high production goal for that area. If this is the case, why is the DES written to suggest that leasing is meant to prevent a production shortfall rather than a shortfall in a DOE-estimated demand that may or may not occur? A few wording changes in the DES would make this point clearer to a reader.

Also, there is no way that 369 million tons will be mined in this area by 1990. If it is of interest to the State, we could revise Table 2-2 to reflect our opinion of what really may be expected. Obviously, if less capacity is shown in that table, DOI will probably push for more extensive leasing than the RCT has already proposed. Because of this, we will not revise the table unless it is requested of us.

Final comment

The DES preparers should be complimented on their foldout Regional Activity map. It is a great improvement over older EIS's that didn't even include maps, let alone regional ones.

Geology--Interpreting the past to provide for the future



29

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Wyoming Recreation Commission

804 EAST 25TH STREET
CHEYENNE, WYOMING 82002

COMMISSION
OFFICERS
E. LAWSON SCHWOPE
PRESIDENT
900 Foyer Avenue
Cheyenne 82001
CHARLES H. JOHNSON
VICE PRESIDENT
1121 Alder
Rawlins 82301
RICK BILMER
TREASURER
P.O. Box 61
Lusk 82225
MEMBERS
MRS. ROBERT FRISBY
2306 Forest Drive
Cheyenne 82001
FLOYD BARTLING
P.O. Box 172
Douglas 82633
LARRY BIRLEFFI
929 E. Apache
Cheyenne 82001
JACK D. OSMOND
P.O. Box 316
Thayne 83127
ALBERT PILCH
1900 Monte Lee
Evanston 82930
DAN MADIA
1017 Victoria
Sheridan 82801

JAN L. WILSON
Director
777-7695

August 6, 1981

Mr. Dick Hartman
State Planning Coordinator
2320 Capitol Avenue
Cheyenne, Wyoming 82002

Dear Sir:

Enclosed is a memorandum from our staff archeologist regarding the Powder River Coal DEIS. Thank you for giving us the opportunity to comment.

I agree with Mr. Bryant's comments, and encourage the BLM to make provision for "buried sites" when the Final EIS is written. If you have any questions regarding the proper procedures for such sites, please contact the appropriate member of our staff.

Sincerely,

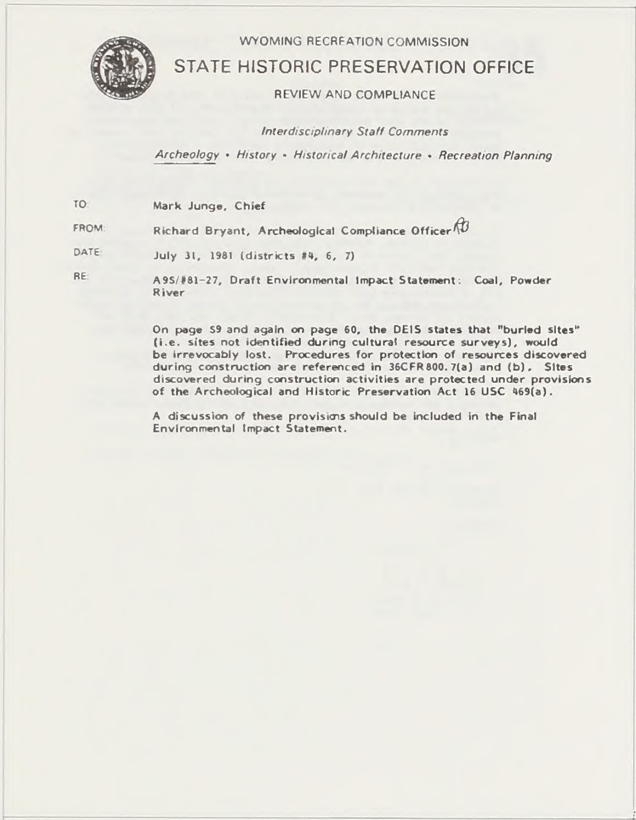
Mark Junge

Mark Junge, Chief
Resources Division and
Deputy SHPO

FOR:

Jan L. Wilson, Director and
State Historic Preservation Officer

MGJ:klm
Encls.



WYOMING RECREATION COMMISSION
STATE HISTORIC PRESERVATION OFFICE
REVIEW AND COMPLIANCE

Interdisciplinary Staff Comments

Archeology • History • Historical Architecture • Recreation Planning

TO: Mark Junge, Chief

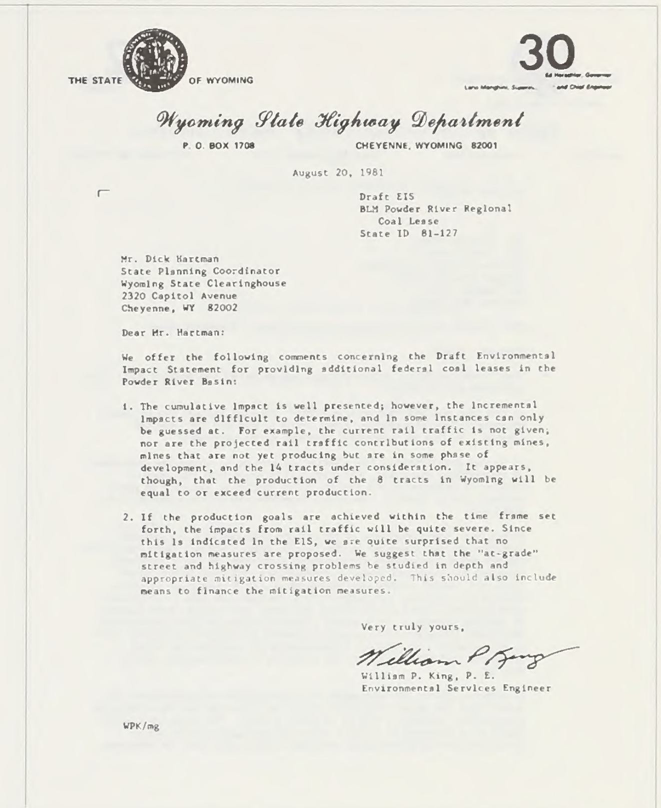
FROM: Richard Bryant, Archeological Compliance Officer RB

DATE: July 31, 1981 (districts #4, 6, 7)

RE: A9S/#81-27, Draft Environmental Impact Statement: Coal, Powder River

On page 59 and again on page 60, the DEIS states that "buried sites" (i.e. sites not identified during cultural resource surveys), would be irrevocably lost. Procedures for protection of resources discovered during construction are referenced in 36CFR800.7(a) and (b). Sites discovered during construction activities are protected under provisions of the Archeological and Historic Preservation Act 16 USC 469(a).

A discussion of these provisions should be included in the Final Environmental Impact Statement.



30

THE STATE OF WYOMING

Wyoming State Highway Department

P. O. BOX 1708 CHEYENNE, WYOMING 82001

August 20, 1981

Draft EIS
BLM Powder River Regional
Coal Lease
State ID 81-127

Mr. Dick Hartman
State Planning Coordinator
Wyoming State Clearinghouse
2320 Capitol Avenue
Cheyenne, WY 82002

Dear Mr. Hartman:

We offer the following comments concerning the Draft Environmental Impact Statement for providing additional federal coal leases in the Powder River Basin:

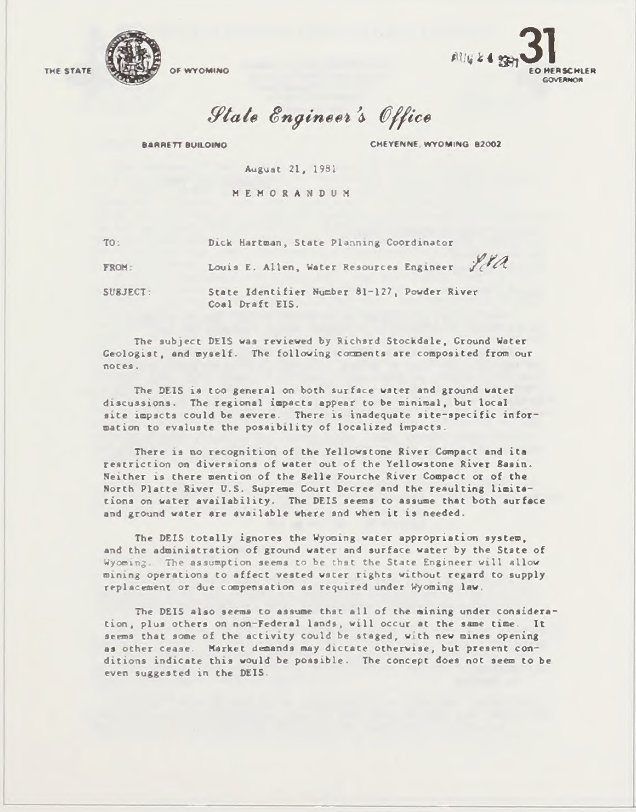
1. The cumulative impact is well presented; however, the incremental impacts are difficult to determine, and in some instances can only be guessed at. For example, the current rail traffic is not given; nor are the projected rail traffic contributions of existing mines, mines that are not yet producing but are in some phase of development, and the 14 tracts under consideration. It appears, though, that the production of the 8 tracts in Wyoming will be equal to or exceed current production.
2. If the production goals are achieved within the time frame set forth, the impacts from rail traffic will be quite severe. Since this is indicated in the EIS, we are quite surprised that no mitigation measures are proposed. We suggest that the "at-grade" street and highway crossing problems be studied in depth and appropriate mitigation measures developed. This should also include means to finance the mitigation measures.

Very truly yours,

William P King

William P. King, P. E.
Environmental Services Engineer

WPK/mg



31

AUG 24 1981

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

State Engineer's Office

BARRETT BUILDING CHEYENNE, WYOMING 82002

August 21, 1981

MEMORANDUM

TO: Dick Hartman, State Planning Coordinator

FROM: Louis E. Allen, Water Resources Engineer LEA

SUBJECT: State Identifier Number 81-127, Powder River Coal Draft EIS.

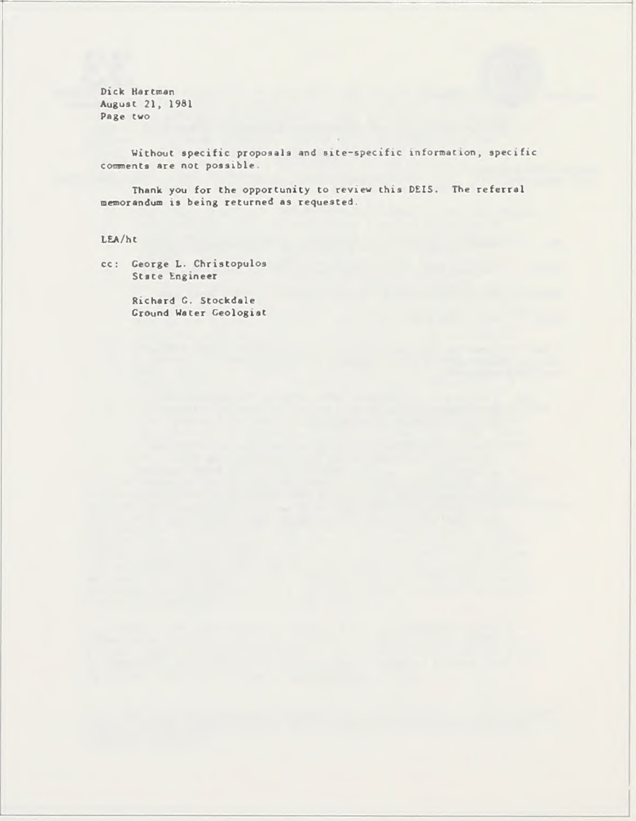
The subject DEIS was reviewed by Richard Stockdale, Ground Water Geologist, and myself. The following comments are composited from our notes.

The DEIS is too general on both surface water and ground water discussions. The regional impacts appear to be minimal, but local site impacts could be severe. There is inadequate site-specific information to evaluate the possibility of localized impacts.

There is no recognition of the Yellowstone River Compact and its restriction on diversions of water out of the Yellowstone River Basin. Neither is there mention of the Belle Fourche River Compact or of the North Platte River U.S. Supreme Court Decree and the resulting limitations on water availability. The DEIS seems to assume that both surface and ground water are available where and when it is needed.

The DEIS totally ignores the Wyoming water appropriation system, and the administration of ground water and surface water by the State of Wyoming. The assumption seems to be that the State Engineer will allow mining operations to affect vested water rights without regard to supply replacement or due compensation as required under Wyoming law.

The DEIS also seems to assume that all of the mining under consideration, plus others on non-Federal lands, will occur at the same time. It seems that some of the activity could be staged, with new mines opening as other cease. Market demands may dictate otherwise, but present conditions indicate this would be possible. The concept does not seem to be even suggested in the DEIS.



Dick Hartman
August 21, 1981
Page two

Without specific proposals and site-specific information, specific comments are not possible.

Thank you for the opportunity to review this DEIS. The referral memorandum is being returned as requested.

LEA/ht

cc: George L. Christopulos
State Engineer

Richard G. Stockdale
Ground Water Geologist

32

THE STATE OF WYOMING
EXECUTIVE DEPARTMENT
ED HERSCHLER
GOVERNOR

Office of Industrial Siting Administration

SUITE 500 BOYD BUILDING CHEYENNE, WYOMING 82002 TELEPHONE: 307-777-7368

August 26, 1981

Mr. Charles Wilkie
EIS Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, WY 82601

RE: Powder River Draft Environmental Impact Statement Coal

Dear Mr. Wilkie:

The Industrial Siting Administration has reviewed the subject EIS. Our comments are as follows:

1) The map entitled "Regional Activity" does not include the proposed Hampshire Coal Liquefaction Plant which is planned for Campbell County. Is this an intentional omission or an oversight?

2) In the description of the affected environment, under the discussion of recreational resources, the statement is made that the present number of facilities in the Powder River Region is adequate to meet current use or demand. No study is referenced which supports this statement.

It has been the experience of this Office that outdoor recreational facilities are not adequate in the Gillette area. Keyhole State Park, the closest major recreational development to Gillette, is being seriously impacted by increased usage in combination with inadequate funds. State and federal recreational developments in Wyoming do not have mineral or severance tax earmarked to increase services in proportion with increased use and associated problems, but rather, must depend on general funding. As a result cumulative impacts from region-wide population increases have caused increased vandalism and higher costs in maintenance and repair. Consequently we question the broad statement that these facilities are adequate to meet current use or demand.

In addition under the discussion of environmental consequences it is stated that the short term affect would be increased use on a resource [recreational resource] that is in short supply. The long term effect would be a decrease in demand when the population levels off or decreases making recreational facilities supply adequate. We disagree. If a resource is in short supply and nothing is done to increase this supply and population levels increase significantly and then stabilize there is no way that the recreational facility supply can be termed adequate. Therefore it appears that the EIS does not fully present the impact that will result on recreational resources. This inadequacy should be addressed in the Final Environmental Impact Statement.

3) On page 51 the EIS states that the proposed leasing would have little effect on the regional groundwater systems. Some study should be referenced to support this statement.

4) The EIS does not present an accurate picture of the housing situation in Gillette, Wyoming. On page 63 of the EIS it is stated that housing construction is expanding concurrently with the rapid growth rate that Gillette is experiencing. This is not entirely accurate; due to the high cost of dwelling units, high mortgage interest rates, and the lack of construction loans available from local sources, it is becoming increasingly difficult for the private housing sector to respond to the demand for housing units. Consequently it has and most likely will continue to be necessary for new industries such as coal mines to provide some type of housing mitigation program for their employees. The Final EIS should address the problems that are occurring in the housing area and discuss mitigating measures.

We appreciated the opportunity to review the EIS and hope that our comments will assist you in the preparation of the Final Environmental Impact Statement.

Sincerely,

Richard C. Moore, P.E.
Director

RCM/sm

33

THE STATE OF WYOMING
ED HERSCHLER
GOVERNOR

Department of Environmental Quality

AIR QUALITY DIVISION

EQUALITY STATE BANK BLDG
401 W. 18TH STREET CHEYENNE, WYOMING 82002 TELEPHONE 777-7391

MEMORANDUM

TO: Robert E. Sundin, Director, Dept. of Environmental Quality
FROM: Randolph Wood, Administrator, Air Quality Division
SUBJECT: Draft Environmental Impact Statement - Powder River Coal
DATE: August 26, 1981

I have reviewed the Air Quality Section of the subject DEIS, and based upon our experience in issuing permits for coal mining, I offer the following comments:

(1) I believe it is inappropriate to use carbon monoxide and lead concentrations from Billings, Montana and Glenwood Springs, Colorado as background for Gillette, Wyoming.

(2) Absent the ability to spend large resources in reviewing the detailed analyses of air quality impact from the alternatives, I can only respond that in the final analysis, the issuance of permits for these facilities will be predicated upon a showing that the standards will be maintained. It would be nice to be able to reach such a conclusion at this time but I cannot lend assurance that such is the case.

34

Consolidation Coal Company
Federal Coal Acquisition Group
14 Inverness Drive East, Bldg. 6
Englewood, CO 80112
(303) 770-1600

September 16, 1981

Bureau of Land Management - P&EC
Attention: Chuck Wilkie
951 Rancho Road
Casper, Wyoming 82601

Dear Mr. Wilkie:

Please accept this letter as Consolidation Coal Company's comment on the Powder River Draft Environmental Impact Statement for coal.

Although Consol has no problem with the alternative preferred by the Regional Coal Team, we do have a problem with the Northwest Otter Creek Tract within the preferred alternative. Certain areas within this tract, which Consol feels are mineable, have not been considered for leasing in the Draft EIS. These areas lie outside the "200' depth-to-coal line". However, they contain coal at a mining ratio of 5.0:1 or less.

With this in mind, Consol requests that the Northwest Otter Creek Tract description be amended to include the following areas for leasing:

T4S-R45E

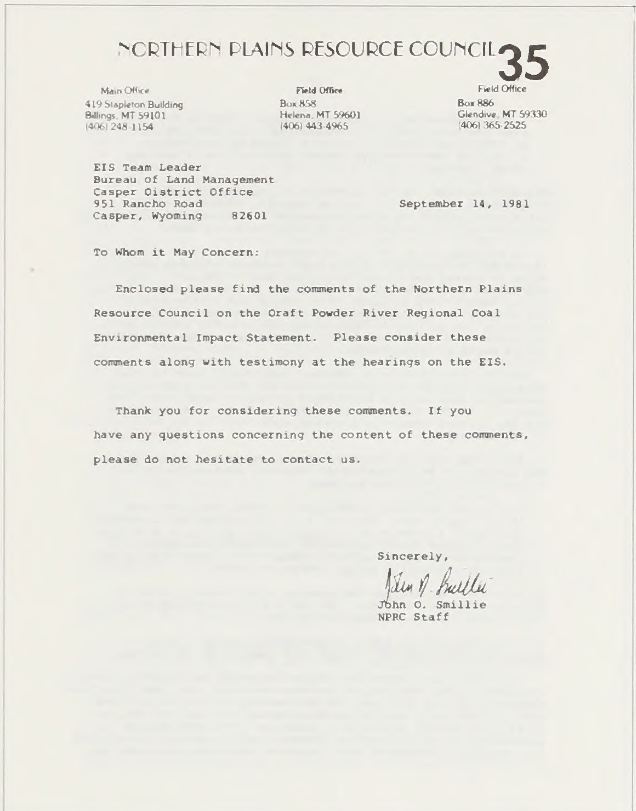
Section 8 - SW 1/4 SW 1/4
Section 18 - E 1/2
Section 20 - NW 1/4 NW 1/4

Sincerely,

Alan Falenski
F.C.A.G.

AF:kt

CC: R. Ford
K. Redding



NORTHERN PLAINS RESOURCE COUNCIL

Main Office
419 Stapleton Building
Billings, MT 59101
(406) 248-1154

Field Office
Box 858
Helena, MT 59601
(406) 443-4965

Field Office
Box 886
Glendive, MT 59330
(406) 365-2525

35

EIS Team Leader
Bureau of Land Management
Casper Oistrict Office
951 Rancho Road
Casper, Wyoming 82601

September 14, 1981

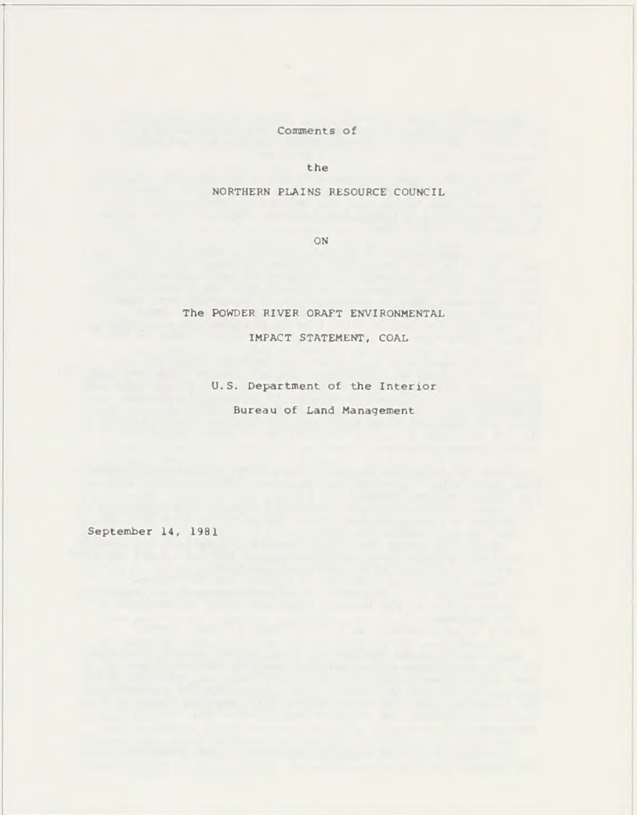
To Whom it May Concern:

Enclosed please find the comments of the Northern Plains Resource Council on the Oraft Powder River Regional Coal Environmental Impact Statement. Please consider these comments along with testimony at the hearings on the EIS.

Thank you for considering these comments. If you have any questions concerning the content of these comments, please do not hesitate to contact us.

Sincerely,

John O. Smillie
NPRC Staff



Comments of

the

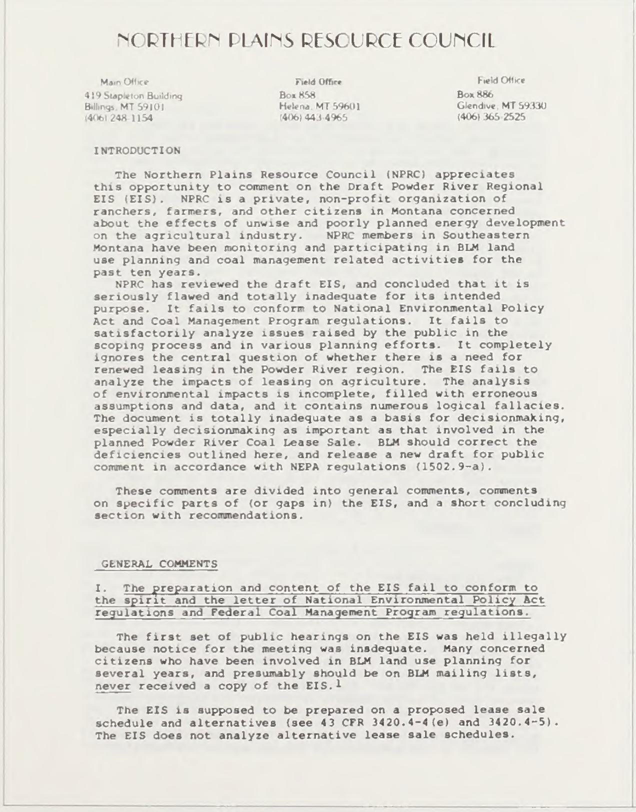
NORTHERN PLAINS RESOURCE COUNCIL

ON

The POWDER RIVER ORAFT ENVIRONMENTAL
IMPACT STATEMENT, COAL

U.S. Department of the Interior
Bureau of Land Management

September 14, 1981



NORTHERN PLAINS RESOURCE COUNCIL

Main Office
419 Stapleton Building
Billings, MT 59101
(406) 248-1154

Field Office
Box 858
Helena, MT 59601
(406) 443-4965

Field Office
Box 886
Glendive, MT 59330
(406) 365-2525

INTRODUCTION

The Northern Plains Resource Council (NPRC) appreciates this opportunity to comment on the Draft Powder River Regional EIS (EIS). NPRC is a private, non-profit organization of ranchers, farmers, and other citizens in Montana concerned about the effects of unwise and poorly planned energy development on the agricultural industry. NPRC members in Southeastern Montana have been monitoring and participating in BLM land use planning and coal management related activities for the past ten years.

NPRC has reviewed the draft EIS, and concluded that it is seriously flawed and totally inadequate for its intended purpose. It fails to conform to National Environmental Policy Act and Coal Management Program regulations. It fails to satisfactorily analyze issues raised by the public in the scoping process and in various planning efforts. It completely ignores the central question of whether there is a need for renewed leasing in the Powder River region. The EIS fails to analyze the impacts of leasing on agriculture. The analysis of environmental impacts is incomplete, filled with erroneous assumptions and data, and it contains numerous logical fallacies. The document is totally inadequate as a basis for decisionmaking, especially decisionmaking as important as that involved in the planned Powder River Coal Lease Sale. BLM should correct the deficiencies outlined here, and release a new draft for public comment in accordance with NEPA regulations (1502.9-a).

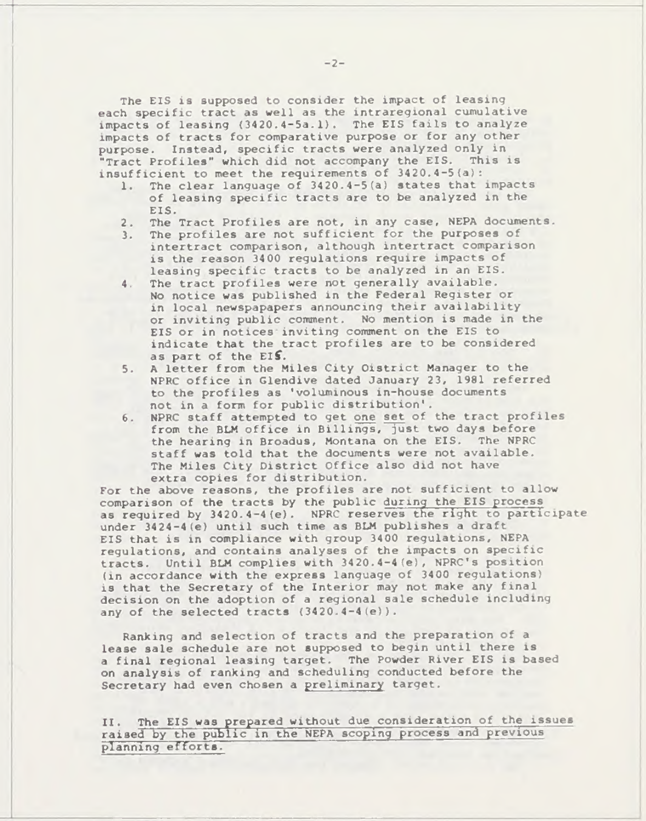
These comments are divided into general comments, comments on specific parts of (or gaps in) the EIS, and a short concluding section with recommendations.

GENERAL COMMENTS

I. The preparation and content of the EIS fail to conform to the spirit and the letter of National Environmental Policy Act regulations and Federal Coal Management Program regulations.

The first set of public hearings on the EIS was held illegally because notice for the meeting was insdequate. Many concerned citizens who have been involved in BLM land use planning for several years, and presumably should be on BLM mailing lists, never received a copy of the EIS.[1]

The EIS is supposed to be prepared on a proposed lease sale schedule and alternatives (see 43 CFR 3420.4-4(e) and 3420.4-5). The EIS does not analyze alternative lease sale schedules.



-2-

The EIS is supposed to consider the impact of leasing each specific tract as well as the intraregional cumulative impacts of leasing (3420.4-5a.1). The EIS fails to analyze impacts of tracts for comparative purpose or for any other purpose. Instead, specific tracts were analyzed only in "Tract Profiles" which did not accompany the EIS. This is insufficient to meet the requirements of 3420.4-5(a):

1. The clear language of 3420.4-5(a) states that impacts of leasing specific tracts are to be analyzed in the EIS.
2. The Tract Profiles are not, in any case, NEPA documents.
3. The profiles are not sufficient for the purposes of intertract comparison, although intertract comparison is the reason 3400 regulations require impacts of leasing specific tracts to be analyzed in an EIS.
4. The tract profiles were not generally available. No notice was published in the Federal Register or in local newspapapers announcing their availability or inviting public comment. No mention is made in the EIS or in notices inviting comment on the EIS to indicate that the tract profiles are to be considered as part of the EIS.
5. A letter from the Miles City Oistrict Manager to the NPRC office in Glendive dated January 23, 1981 referred to the profiles as 'voluminous in-house documents not in a form for public distribution'.
6. NPRC staff attempted to get one set of the tract profiles from the BLM office in Billings, just two days before the hearing in Broadus, Montana on the EIS. The NPRC staff was told that the documents were not available. The Miles City District Office also did not have extra copies for distribution.

For the above reasons, the profiles are not sufficient to allow comparison of the tracts by the public during the EIS process as required by 3420.4-4(e). NPRC reserves the right to participate under 3424-4(e) until such time as BLM publishes a draft EIS that is in compliance with group 3400 regulations, NEPA regulations, and contains analyses of the impacts on specific tracts. Until BLM complies with 3420.4-4(e), NPRC's position (in accordance with the express language of 3400 regulations) is that the Secretary of the Interior may not make any final decision on the adoption of a regional sale schedule including any of the selected tracts (3420.4-4(e)).

Ranking and selection of tracts and the preparation of a lease sale schedule are not supposed to begin until there is a final regional leasing target. The Powder River EIS is based on analysis of ranking and scheduling conducted before the Secretary had even chosen a preliminary target.

II. The EIS was prepared without due consideration of the issues raised by the public in the NEPA scoping process and previous planning efforts.

The Eastern Montana Growth Task Force recommended several parameters for the analysis of social and fiscal impacts on local communities. Many of these impacts are not even mentioned in the EIS, let alone analyzed.[2]

The Coal Team was also informed about the concerns of local citizens in the region about the need for adequate community development lead times, and the effects of rapid growth on senior citizens and low-income persons. None of these issues is addressed in the EIS.[3]

Finally, Keith Bennett of BLM prepared a paper at the Coal Team's request, entitled "Regional Concerns in Coal Leasing". Of the unananimous concerns of the regional public identified in that document, virtually none are analyzed in the EIS. His paper made a special point to emphasize the concern expressed about the impacts to agriculture, yet analysis of the impacts to agriculture (and of the specific sub-issues Bennett identified) is almost completely absent from the EIS.[4]

The EIS even fails to discuss the economic viability of opening new mines in a production region plagued with overcapacity; disruption of family farms and ranches; changes to agricultural productivity (as opposed to changes in gross agricultural production); or changes to rural quality of life--yet all of these are supposed to be tract ranking factors (Table 1-2). The EIS provides no useful information on these topics for tract ranking purposes.

In the introduction to the "Powder River Management Framework Plan Amendments" (Amendments: BLM, June, 1980), the BLM made the following committment:

> ...serious issues remain unresolved regarding the specific impacts of mining on the area's agricultural land base and the region's quality of life...
>
> We totally agree that these impacts, as well as the overall regional perspective, must be assessed and the issues resolved before any dicisions to mine coal are made...
>
> These issues are a matter of record, and the Bureau is committed to a reasoned, sound resolution of all remaining issues prior to any leasing decisions being recommended to the Secretary.

The EIS fails miserably as a fulfillment of that pledge.

In comment on the Amendments, Patty Kluver raised the issue of the degradation of groundwater quality and the effect of that degradation on wildlife and livestock. In response, BLM pledged to address this issue in the EIS. The EIS addressed the issue only in a cursory fashion (cf. specific comments below) and ignores the evidence mentioned in Mrs. Kluver's testimony.

In response to Jean Hough's testimony on the Amendments, BLm stated:

> The numerous major potential impacts cited (i.e. mine-mouth utilization, reclamation, etc.) are impacts of mining and leasing...activity planning (including a regional environmental impact statement) will address those impacts...

The EIS, however, fails completely to address mine-mouth utilization or any other end-use impacts. Other "major potential impacts" such as reclamation are addressed inadequately or not at all in the EIS (cf. specific comments below).

In response to Mr. Weiner's comments, BLM said "...threshhold levels may be developed during coal resource activity planning based on public and state/local government comments." Yet BLM failed to solicit such comments or to consider the comment of Mr. Weiner, the comments of Ms. Hough and others made previously, or the provisions of the coal management program regarding the setting of threshhold levels. The EIS fails to discuss any threshhold levels, or whether or not threshhold levels might be appropriate.

Again in response to Mr. Weiner, BLM stated that "...the potential impacts on specific farms and ranches from leasing and mining coal will be considered in the regional (activity plan) EIS." The EIS fails to analyze even one farm or ranch and the effects leasing and mining might have on the profitability of its operation.

NPRC protested the adoption of the Amendments to the State BLM Director. The Director, Mr. Penfold, denied the protest in part on the following grounds:

> The tracts will then be analyzed, ranked, and discussed in the Powder River Regional Environmental Impact Statement. The impact statement will consider the impacts on each tract, should mining occur, as well as the cumulative impacts of leasing different arrays of tracts to meet the established regional production target. (Emphasis added).

The EIS fails to analyze the impacts on each tract as the Director pledged. Further, the EIS was prepared without an established regional production target.

III. The EIS totally fails to address the issue of coal demand and the need for renewed coal leasing in the region.

One of the most important issues raised by the public, industry representatives, Interior Department officials and other government agencies concerns the need for new leasing in the Powder River Basin. NPRC has commented extensively on the need for new leasing previously in activity planning. The EIS fails to provide any rationale for the proposed leasing target, to provide any reason for selecting that target rather than any other, or

to analyze other possible targets. At a minimum, the EIS should include the following as alternatives, in addition to the four alternatives considered:

1. Leasing of maintenance tracts only.
2. Leasing to meet the originally established target of 776 million tons of federal coal.

The omission of any rationale for the size of the proposed lease sale is especially critical because there is no publically available document which explains or justifies the proposed 1.5 billion ton lease target. The Interior Department refuses to make the Powder River Lease Target Secretarial Issue Document available to the public. There is, therefore, no information available to the public from BLM to provide any basis for a recommendation on which alternative discussed in the EIS best responds to the nation's energy needs and coal management policy. Commentors have no basis for balancing environmental consequences of proposed actions against the need for the proposed actions, because no need for the proposed actions is anywhere identified.[5]

IV. The EIS was prepared under an accelerated schedule, which is partly responsible for the inadequacy of the document.

The schedule for preparation of the EIS as published in the Public Participation Plan and approved by the Regional Coal Team was accelerated without changing the Plan and without any action or discussion by the Regional Coal Team. While it is commendable than an EIS can be finished ahead of schedule, it is only commendable if the early completion date is not acheived at the expense of accuracy, sufficiently rigorous analysis, or compliance with applicable guidelines. The Powder River EIS was completed ahead of schedule at the expense of all three.

V. The assessment of impacts to agriculture, regionally and on a site-specific basis, is totally inadequate.

BLM is well aware of the history of NPRC's attempts to obtain adequate assessments of the impacts of leasing throughout the BLM planning process. Because of these efforts, BLM promised much analysis of impacts to agriculture in the activity planning process, and specifically in this EIS. The EIS, which is nearly devoid of any information on the impacts of leasing on agriculture, is therefore especially disappointing to NPRC.

The only discussion of the impacts to agricultural operations and economics is a reference to the two tables in Appendix G. These tables, in turn, consist of an almost useless compilation of impacts to on-site operators, the derivation of which is a complete mystery; and a table of statistics taken from a drought year in the region, which is apparently intended to show that stripmining even the whole of Powder River and Rosebud Counties would have only a negligible effect on national food production.

The EIS completely ignores the most important impacts to

agriculture, which are those that occur outside of the mining area (where landowners receive no compensation for damages). The discussion of issues vital to agricultural productivity--reclamation and goundwater--presents no new data or anlysis, but rather consists of platitudes and generalizations and unfounded assumptions. The entire discussion of these important issues lacks any factual supporting evidence.

The impacts of associated facilities, such as new railroads, are completely ignored, although the preferred alternative would be associated with the permanent disruption of dozens of ranches on the Tongue River and elsewhere due to the construction of railroads. Many of these ranches would be rendered uneconomical as ranching units by the proposed action, yet the EIS fails to analyze this impact. The impacts of mine-mouth utilization, which are much more significant to agricultural productivity on a regional basis than even the impacts of mining, are not included in the EIS.

The EIS generally exhibits no understanding of the connection between disruption of part of a ranch and the profitability of the ranch as a unit. This problem causes the EIS to understate the only costs it did assess in regard to impacts of leasing on agriculture, the on-site impacts. The EIS fails to discuss the effect of marginal impacts (such as degraded, but not ruined, groundwater, the costs of well replacement, the effects of aquifer "relocation") on ranch economics. It is not enough to say that a shallow aquifer may be replaced by a deeper well, and to then assume that there is no impact on agriculture, as the EIS does repeatedly. The extra costs of drilling and operating that well must be identified.

SPECIFIC COMMENTS

SUMMARY

General Conclusions

The EIS states that "the No-Action alternative would have impacts considerably greater than any of the other alternatives in the EIS."

This statement is suspect on its face, palpably false upon examination, and is flatly contradicted by the data elsewhere in the EIS. For the most obvious example of data which contradicts the statement, see the summary table 2-1 on pp. 22-24. The statement is based on the faulty premise that it is permissable to compare the marginal impact of leasing tracts to the baseline impact of development that will occur with or without leasing. Of course, the proper comparison for the purpose of the summary is between the impacts of the baseline and the impacts of the baseline together with the impacts of the tracts to be leased. To compare anything else is ludicrous, misleading, and invalid. The conclusion is also based in part on the statement that the impacts of leasing differ between alternatives by magnitude, rather than by type, and the magnitude of impacts is generally proportionate to the amount of coal produced.

This is an *assumption* which underlies the entire EIS analysis. It is *not* a conclusion. It is an *invalid* assumption, since the impacts of leasing will be entirely different--by type, not just by magnitude--from the impacts of the no-action alternative for the Otter Creek and Tongue River Valleys.

The EIS states that "All the alternatives, including the No-Action, would further commit the region to a single economic base (coal). This trend is well established in Wyoming but would create a shift in economic base in Montana where agriculture has accounted for a *significant* part of the economic base to date." (Emphasis added).

The statement is false. Agriculture is and will be the dominant economic force in southeastern Montana, even with the scale of development analyzed in the No-Action alternative. Agriculture is not, as stated, merely a "significant" part of the economic base in Montana; it provides the majority of the region's economic base, and it is the largest industry in the state.

Highlights

The section on water resources mentions shallow aquifers as the only area where problems would be created by leasing, and says that deeper water is needed for human consumption, anyway. This fails to note the impact of degraded water quality or increased pumping costs for deep wells on agricultural productivity.

The section on air quality mentions only "localized" impacts, and fails to note the impacts of end-use (on-site conversion). This is a major deficiency in the EIS.

The summary states that "reclamation success has shown to be good (sic) (Packer, 1974)." This conclusion is not warranted (cf. detailed discussion below).

Under "Land Use", the EIS states: "Land use patterns are expected to shift from agricultural toward mining and urbanization without new federal coal leasing and implementation of the preferred alternative would change this very little."

The EIS does not state which way this would change. The conclusion, in any case, contradicts the finding that 44 more ranches would be impacted under the preferred alternative. It also ignores all off-site impacts, including the impacts to ranches along Tongue River and Otter Creek which would result from the construction of the Tongue River Railroad, due to adoption of the preferred alternative. Further, it ignores the fact that without Federal leasing, land use patterns would not shift to industrial uses in Southeastern Montana, since no *new* mines would open without federal leasing.

The EIS says, on page two, that "losses to the ranches that would be substantially affected would be offset by royalties or fees paid by the mines for the use of private land."

This is a gross misstatement and reflects a callous and short-sighted attitude about land use and impacts to agriculture. It completely ignores the national question of the availability of agricultural land, which would seem to be the central question regarding land use. Royalties to landowners do not bring more land into agricultural production.

The statement totally misses the impacts to agricultural operators off-site. These landowners receive *no* royalties, although the impacts off-site (aquifer disruption, ranches bisected for railroad rights of way, and so on) may dwarf the impacts on the minesites.

P. 3: The summary of transportation impacts does not include the cost of need improvements to highways near Ashland. It doesn't mention the Tongue River Railroad, which would have been appropriate at this point in the EIS. The statement says that the preferred alternative "equates" to 50 trains a day through Miles City, but it fails to note if this means 50 trains all together or 50 more than without leasing.

The EIS states: "Increases in population are expected with or without new federal coal leasing." This is not true for southeastern Montana, where the increase of population without leasing is expected to be slight and gradual. The EIS then claims that "most of the impacts (in Rosebud County) could be mitigated but only through strong community committment and assistance from both federal and state governments." The EIS fails to note here (or elsewhere) how much money is available, what sources (specifically) it would come from, and so forth. The statement inexplicably closes out the option of *industry* assistance in mitigating impacts.

CHAPTER 1: PURPOSE AND NEED

The section on required authorizations neglects NEPA.

At page 6, under the "Review of Program Implementation", NPRC is painted as a scapegoat for the withdrawl of the lands in the Powder River MFP Amendments from this coal lease sale. The EIS states that NPRC's Protest of those amendments was responsible for the withdrawl due to a delay caused by the Protest. NPRC is owed an apology and a retraction for this statement in the EIS.

The statement fails to note that the appeal of the denial of protest was never reviewed by the BLM Director, and that the merits of the protest remain undecided. The EIS states that delay *caused by the protest* is responsible for the removal of lands from consideration. This is false.

BLM planning has been going on in the area since at *least* 1972 (cf. *Amendments*). Updating the land use plans began in 1979, and were underway at least 1½ years before the document was completed. In that time, BLM completed roughly 2% of the application of the lands unsuitability criteria, so considerable effort remained to enable the lands to be considered for leasing. Whether compared with 1½ years, 2½ years, or the 10 years that have elapsed since planning began in the area, the (at *most*) one month delay caused by the appeal of the protest pales into insignificance. It is plain that BLM's planning schedule allowed insufficient time for the application of the unsuitability criteria and the completion of other planning steps, and that BLM decided to drop the areas of presumably limited interest rather than delay the entire lease sale. Delays in completion of BLM responsibilities--not NPRC's protest--caused the areas to be withdrawn.

The opportunity to protest MFP amendment decisions was outlined in the public summary document on the Amendments. Presumably, BLM has the foresight to plan for a protest period when establishing the necessary lead times for planning purposes, and did so in this case. It is reprehensible for BLM to attempt to attribute a delay caused by its own planning deficiencies and judgemental mistakes on NPRC, which merely exercised its right to participate in BLM decisionmaking by calling attention to BLM's deficiencies. NPRC has been maligned as a result at several meetings of the Powder River Regional Coal Team, and again in the EIS.

In discussing the Tongue River Unsuitability Petition, the EIS incorrectly names three affiliates of NPRC. The correct names are the Tri-County Ranchers Association, the Rosebud Protective Association, and the Tongue River Agricultural Protective Association.

page 7. The EIS states that "energy production within the region is at an all-time high and rapid growth is occurring... Feasiblity studies for additional coal-fired power plants are being conducted by companies such as Tri-state Electric and Black Hills Power and Light..." The EIS goes on to mention synfuels projects such as WyCoal Gas.

The statement fails to mention that the feasiblity studies have in many cases resulted in postponement of plans for power plants. The WyCoal Gas project has been dropped.

The statement is incredible in light of the tremendous coal *glut* in the region. It is hard to believe that the EIS could discuss energy production in the region (not to mention the need for new leasing) without any mention of the tremendous overcapacity in existing mines in the region. This is one of the most serious deficiencies in the EIS, because it is pointless to debate alternatives and varying levels of impacts unless the *need* for incurring those impacts exists.

The EIS not only fails to discuss any justification of the need for new leasing, but it also fails to note the existing situation of the coal market in the region. (For a brief discussion of some of the issues involved, see Attachment D).

CHAPTER 2: ALTERNATIVES INCLUDING THE PROPOSED ACTION

Introduction

The resource disciplines used in the EIS did not include any agricultural sciences, a deficiency with obvious results in the EIS.

Assumptions

The EIS assumes all relevant laws will be followed. Presumably, one of the main purposes of the EIS is to assess the practicability of compliance with those laws (i.e. reclamation, diligent development requirements, etc.).

Population impacts are assumed to be divided 60-40 between Rosebud and Powder River Counties. How can something as important to the assessment of leasing impacts by *assumed?* This throws the credibility of the entire social economic and fiscal analyses into doubt.

The EIS assumes that "post-mining land use will be the same as pre-mining land use, except for the lands used for housing or public facilities." This is an outrageous assumption. It is not supported by a single example in the Northern Great Plains where pre-mining land use has continued at comparable levels after mining. It ignores railroads and railroad rights of way and other associated impacts which permanently change land use. BLM has assumed away one of the most important questions which should have been addressed by analysis in the EIS.

Alternative 1

Groundwater: The EIS states that "wells usually can be replaced by tapping deeper aquifers or with wells in spoil aquifers." The statement ignores the increased pumping costs of deeper wells, and fails to demonstrate that spoil aquifer water quality will be equal to or better than premining water quality. The EIS states that "springs may eventually reappear, but would be in different locations." The statement should indicate the probability of this occurence, any changes in quality, and describe the frequency with which springs will be relocated to different pastures or onto new ranches; "eventually" should be defined. Examples of similar occurrences on actual minesites should be given.

The statement says that "impacts of coal mining on groundwater are restricted to an area within a few miles of the mine site." Again, examples where this has been true in the past, and studies or other supporting evidence, are needed.

The EIS states, "shale layers that may have caused springs and seeps would be destroyed; however, the increased infiltration may cause increased groundwater inflow to streams or the creation of new springs and seeps near the mine site." The EIS should state whether these changes would be beneficial or harmful; how these changes would occur, and in what areas under consideration for lease; the EIS should give examples, again, where similar occurrences of such restoration exist; and it should cite whatever studies underly this analysis.

Similar statements concerning groundwater and surface water are found throughout the EIS. No examples of the types of miraculous reconstruction of groundwater resources which the EIS describes are given. Instead, hypothetical scenarios are used to analyze impacts to groundwater. The impacts of changes that the EIS does predict (relocation, or degradation of groundwater) on economics of ranching units are not analyzed. No studies of groundwater problems--such as those conducted at Colstrip, Montana, for mine permitting purposes--are cited. For the purposes of keeping these comments brief, objections to all such statements are hereby incorporated.

Air Quality: This section should describe the impacts of mine-mouth utilization (power plants, synfuels plants, etc.) as well as the mines, on air quality. Under Alternative 2, the EIS states that "estimates of total suspended particulate (tsp), nitrogen dioxide (NO_x), and sulfur dioxide (SO_2) emissions were calculated for mines,cities, major roadways, and major point sources." However, other than to cite 1995 regional particulate emission projections, none of this information--by tract, by region, or by source--is contained anywhere in the EIS.

Soils, Vegetation, and reclamation: The EIS states that "reclamation success has shouwn to be good (Racker, 1974) although some areas could require more intensive and costly management." The Packer study is controversial, and inapplicable in any case as proof of reclamation success. The study was written before the Federal stripmine act--which contains the legal standard for judging reclamation success--was written. It is a study on reclamation potential, not reclamation success. The statement does not cite any source for the comment concerning more costly management in some areas; it certainly is not from Racker.

Transportation: The EIS incorrectly lists the Tongue River Railroad as an impact under the no-action alternative. Tongue River Railroad officials have informed the Powder River Regional Coal Team that production of 30 million tons per year in the area is necessary if the railroad is to be profitable. Production of this amount annually is dependent on new leasing (Alternatives 2, 3, or 4).

Sociology: The EIS does not mention any of the social problems attendant in boomtown growth, such as drug and alcohol abuse, spouse abuse, increased crime rates, etc.

Economics: The EIS discusses only 1990 budget levels. The years between 1985 and 1990--when impacts are at their peak, but income from the mines (still under construction) will be at a minimum--is much more critical in terms of local budgets than 1990.

The EIS assumes balanced budgets without new leasing, although the no-action alternative assumes increases in coal production of roughly 200% over current production. Obviously, some communities will be greatly impacted. This is also inconsistent with the conclusion that the no-action alterntive has the greatest impact.

The greatest problem with the economic fiscal analysis is that the tables provided do not have the existing baseline and the Alternative 1 baseline together for comparison. This makes the comparison of leasing impacts misleading, and understates the overall impact of mining.

Soil quality: There is no site-specific discussion, or comparison between tracts, of soil quality in the EIS. This illustrates the critical importance of including site-specific information and analyses of tracts in the EIS document. The information would be particularly appropriate here. For example, the tracts considered near Ashland have extremely high percentages of soil that is poor and even totally unsuited to reconstruction and revegetation. These tracts may have serious reclamation problems, according to the data in the tract profiles.

The tract profiles, however, were not generally available, and the EIS contains none of this information. The bland assumptions made in the EIS concerning the ease of reclamation are contradicted by the data in the tract profiles. Had the information been included here in the EIS, some of the more outlandish predictions of reclamation success might have been tempered by the authors.

Sociology: Table 4-8 appears to contain innaccurate extrapolations from the Powder River Comprehensive Plan. The actual figures for needed services should be higher.

Alternative 4

The EIS says "...it should be noted that possible production under this alternative (467 million tons per year) exceeds DOE's high production goal (412 million tons per year). Production approximating DOE's high goal would result in impacts similar in type and severity to those described under alternatives 2 and 3."

It is clear from this statement that production at the level discussed in alternative 4 is highly unlikely. This is even more true when it is considered that virtually no one thinks DOE's high goal resembles anything approaching reality. (CF. attachment). This reinforces the need for discussion of the coal market in the "Purpose and Need" section of the EIS: BLM isn't sure whether or not the level of impacts discussed will be reached or not.

On page 21 is found the only reference in the EIS to the impacts of leasing on Agricultural economics. "Impacts to agricultural economics are considered insignificant" under Alternatives 2, 3, and 4, according to the EIS; the EIS then cites Appendix G, and refers to the tract profiles for the methedology used. This information (methedology) should be in the EIS itself, at least in an Appendix; NRRC has been unable to get a single answer as to how the figures in Appendix G were arrived at. It is clear that different methedologies were used, and possibly different data, between the calculations in the Tract Profiles and those in Table G.

The discussion is misleading in any case, since the analysis only considers impacts to agriculture on the minesites. Furthermore, the EIS elsewhere states that the preferred alternative will remove 293,500 acres from production and cause a total change in the economic base of the region from agriculture to coal. How BLM can nonetheless conclude that "impacts to agricultural economics are considered insignificant" is past understanding.

The analysis of fiscal impacts in Table 2-3 leaves out impacts to Ashland because it is an unincorporated community without formal budget'. It would seem logical to project expenses and revenue on a per capita basis, as was done with the incorporated communities. This would at least provide some analysis of likely fiscal impacts to Ashland, which could experience the greatest impact of any locality under the preferred alternative. to ignore these impacts, as the EIS does, because of the inconvenience involved in measurement is inadequate and innaccurate.

CHAPTER THREE: DESCRIPTION OF THE AFFECTED ENVIRONMENT

Introduction

The EIS leaves out many portions of the existing environment--including flood plains--because they "would not be affected regionally". However, since the EIS is supposed to include site-specific analysis as well as regional analysis, these features of the existing environment should be described in this chapter. This would seem particularly important for such areas as the Tongue/Otter Creek area, where mines and a major railroad are proposed for construction in and near flood plains.

Soils, Vegetation, and Reclamation

On page 36, the EIS states "Most soils in the region have a fairly good reclamation potential based on reclamation success of other mines in the region." This statement needs correction for several reasons. The logic is faulty, but

opp

in a way opposite from the reasoning on reclamation in the rest of the EIS. Where previously the EIS cites studies on reclamation potential in an attempt to prove the existence of reclamation success, the EIS now moves from cite-specific reclamation success backwards to prove the existence of good reclamation potential.

Unfortunately, the only proof cited in the EIS for reclamation success at existing mines is the aforementioned study on reclamation potential, which leaves the EIS with fairly classic circular logic--and no evidence--on the subject of reclamation.

The "success" at existing mines is certainly not a given. Studies of actual mines--such as Reclaiming the West--have shown reclamation success to be an open question, not proven. Using the legal test of reclamation under the stripmine Act, the question is still open--no reclamation bonds have yet been released in the State of Montana. BLM's assumption, then, that reclamation is a success is both unfounded and wrong.

In any case, the success of reclamation at existing mines --if true--would still not show that most soils in the region have a good reclamation potential. The statement is contradicted flatly by the data cited earlier from the tract profiles (see, for example, the Northwest Otter Creek Tract Profile). This is, to repeat, another case where the need for tract by tract analysis is obvious. Site-specific variations in reclamation potential of soils are important to decisionmaking--reclamation potential is, after all, a tract ranking factor--and should be discussed in the EIS.

Land Use

The EIS states "productivity on these lands can only be estimated because of fluctuations caused by climate, markets, and operational decisions." This kind of pointless and vague information was anticipated by NPRC, and is precisely the reason that NPRC has been pressing BLM to do agricultural inventory in the land use planning process for several years. It is noteworthy, also, that after limiting measurement of agricultural productivity to estimates because of the variables inherent in inventory totals, the EIS then neglects to make the estimates. Fluctuations in agricultural markets, it might be pointed out, appear to be no larger than fluctuations in the region's coal market.

Transportation

The EIS incorrectly includes the Tongue River Railroad in the description of the existing environment. The railroad exists only on paper. It does not belong in the description of the existing environment.

Sociology

Community Services and Facilities

The EIS states that Ashland does not have a high school, and that students attend "private and parochial schools in Colstrip and Broadus." There is a parochial high school in Ashland; Ashland doesn't have a public high school.

This does, however, raise the question of how the costs of educating the increased high school age population in Ashland that would result from the preferred alternative are included in county budgets--are they included in the Rosebud County budget, or the Powder River County budget?

Attitudes

The EIS states that "overall, people who were interviewed within the region favored coal development. A few respondents stated they would be in favor only if it was certain the coal was needed to help meet the nation's energy requirements."

This is an inaccurate and extremely misleading summary of the survey results as reported in the Tract Profiles. The Northwest Otter Creek Tract summary reported, for example, that "this favorability is not unconditioned; if it is felt that the nation does not need the coal to ease the national energy programs or that reclamation is not possible or not planned, favorability towards coal development would be greatly reduced."

Emphasis has been supplied. Clearly, more than "a few" respondents conditioned their favorability; they conditioned it on more than whether or not the coal was needed; and some respondents were unconditionally opposed. This type of distortion of sociological survey data has no place in the EIS.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Introduction

The EIS states that the information in the chapter on the affected environment was used to assess the impact of No-Action "which was, in turn, used as the new baseline to assess alternatives 2, 3, and 4." This is not acceptable EIS methedology. Impacts of various alternatives on a single baseline must be compared to each other in a proper analysis. It is not valid to use one of the alternatives as a baseline.

At page 53, the EIS states "...a significant reduction in DS concentrations can be expected with increasing distance from the mined area as a result of the selective retention of ions on particle surfaces (Riffenburg, 1925; Qayyum and Kemper, 1962). Thus degradation of water quality in areas adjacent to reclaimed spoil is expected to be a slow process, and it would be centuries, if ever, before deleterious effects become significant more than a few hundred feet from reclaime areas." There are several points that need to be made about this analysis.

1) Dissolved Solids are not the only parameter of water quality contamination due to stripmining, and indeed are not the most important pollutants to consider.
2) This is another example of the EIS extrapolating from hypothetical situations to measure impact. The practice is particularly suspect in this case, because the studies cited predate the stripmine act and present mining technology; their its applicability to the activities of 90 cubic yard draglines and their effect on Western aquifers is questionable.
3) It would be helpful if the authors of the EIS had provided a comparison here (or anywhere else in the EIS) of the hypothetical extrapolations and data from the real world. For example, all kinds of water quality degradation problems are showing up, off site and some distance from the mines, at Colstrip. A draft DSL EIS and Western Energy's application for extension of a mining permit in Area E predicts similar problems. When the hypotheses are not supported by evidence--and, in fact, are contradicted by available evidence--one begins to doubt the validity of the hypothesis.

On page 58 of the EIS, the authors state: "The success of reclamation and revegetation would depend on the nature of the mine site" and on the reclamation plan."

This statement recognizes several things that are not discussed anywhere else in the EIS.

1. Reclamation is dependent on several site specific factors, and is not a given.
2. Success will vary from place to place.
3. "Revegetation" and "Reclamation" are not identical terms.

However, the statement does not indicate recognition of another important point: that is, that reclaimed land (if reclamation is successful) will require more intensive management than unmined land, which makes the economic viability of returning it to its premining land use at least questionable.

There are several references to reclamation and reclamation success in the EIS; like the discussions on groundwater, they are largely hypothetical and NPRC's criticism of them can be incorporated here in the interests of brevity.

On page 60, in discussing impacts to visual resources, the EIS says that "mines located in these areas could also provide a resource for interpretive and educational programs." What programs? The statement apparently implies that mines are to be treated as a visual resource; NPRC is not aware of any mandate that BLM manage stripmines as a visual resource, or that stripmines are considered a visual resource for planning purposes. This statement certainly has no bearing on the discussion of the environmental impact of stripmining on the visual resources of the region.

The EIS states further that no irreversible or irretrievabl committments of visual resources were identified. The attention of the BLM is directed to Appalachia, to the old North-South railroad bed (which is still marring visual resources of the region 80 years after construction was abandoned) and to the power plants at Colstrip.

On page 60, concerning land use, the EIS states that "underground utilities, pipelines, and overhead power lines would modify agricultural land use but would not remove acres from production." This is not accurate. Rights of way for buried utilities can remove acreage from production. Overhead power lines certainly remove acreage from production. Railroad rights of way, and roads, remove not only the acreage right of way from production, but may also reduce or negatively effect production outside of the right of way by dividing ranching units or making divided fields unprofitable to develop or irrigate.

On page 61, concerning transportation, the fiscal impacts of necessary road improvements are not quantified. These costs should be included in projections of county budget expenditures and state expenditures.

The costs of noise pollution (reduced weight gain in cattle, etc.) are not but should be included in the EIS.

On page 62, under Sociology, the discussion of the impacts on housing should include discussion of the effect on housing costs and quality of housing, not just quantity.

Tables

The figures in tables 4-1A and 4-1B appear to be annual production from Federal state and private coal, and annual production from Federal coal only, respectively. However, the figures for existing mine production are identical in each table. This is impossible, since existing production includes production of federal and state coal at many mines (eg. Colstrip.)

The figures in table 4-3, total acres disturbed, do not add up from the categories listed to the total. Note 'c' indicates that "data breakdown of total acreage is not available". The breakdown comes out to less than 25% of the total. What is the remaining 75%? Should all totals be multiplied by 4 to get approximations for each category, is the 75% not included likely to be broken down differently? The table gives no indication of whether the regional percentages of land type are well approximated by the table.

Table 4-11, p. 78, projects no increase in population for Forsyth under any of the alternatives--yeat the EIS has previously stated that some services (for example hospitals) would be met by facilities in Forsyth and Miles City. How can the use of facilities in Forsyth increase, without and increase in the population there?

Note 'a' says that projections of community populations are based on 1980 ratios of community to county populations. Yet it is obvious that Forsyth's population projection increase (0) is not based on a proportional increase from Rosebud County's population increase.

Table 4-10 (pp. 79-80) should include budget projections for the years 1985 through 1995, at least, and not just for 1990. A budget projection for just one year is not a good indicator of short and long-term impacts to the local communities, and could be very misleading. It is not a good use of the Coal Town model.

The data in the table are obviously anamolous. Budget surpluses are projected for Powder River schools and Broadus, figures that do not correspond to any real-world situation in booming areas. This data should have indicated to the authors that there were serious problems in the assumptions used in the model, unless an example of the type of budget surpluses projected here can be found to indicate that such surpluses are likely.

APPENDICES

The information in most of the appendices is of questionable use in analyzing environmental impacts. Appendices should be included describing the methedology used to calculate agricultural impacts, changes in water quality and quantity, changes in air quality, and socioeconomic and fiscal impacts. Inclusion of such information is clearly appropriate under NEPA regulations.

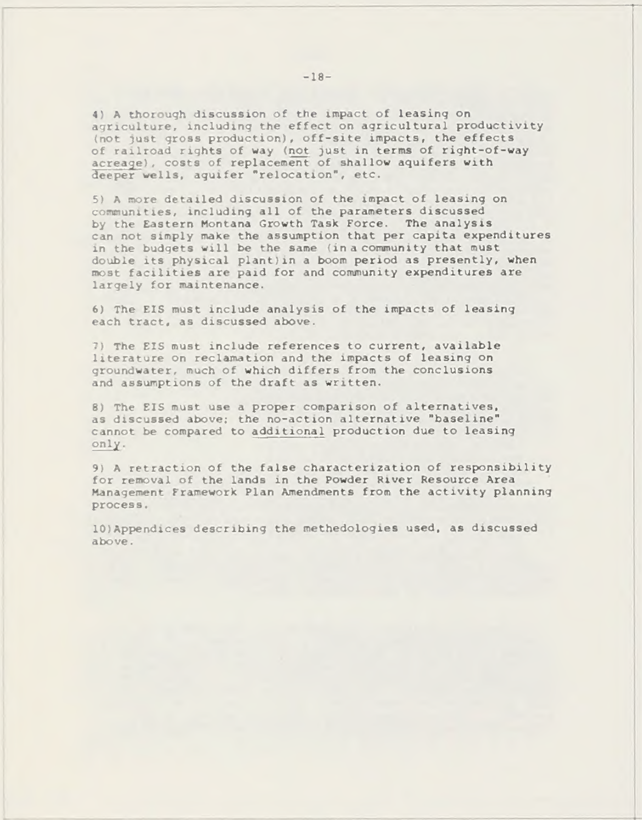
CONCLUSION AND RECOMMENDATIONS.

The EIS is clearly inadequate as written. BLM should reissue the EIS in accordance with the NEPA regulations cited in the introduction. The reissued EIS must include, at a minimum:

1) A thorough discussion of the need for the proposed action, including a discussion of the market for the region's coal and existing mine capacity, undeveloped federal leases, etc.

2) Important viewpoints on controversial questions such as the feasibility of reclamation, effects of mining on aquifers, and so on (this is in accordance with NEPA regulations.)

3) Notations in the EIS where data is lacking or inconclusive (this is also in accordance with NEPA regulations).



-18-

4) A thorough discussion of the impact of leasing on agriculture, including the effect on agricultural productivity (not just gross production), off-site impacts, the effects of railroad rights of way (not just in terms of right-of-way acreage), costs of replacement of shallow aquifers with deeper wells, aquifer "relocation", etc.

5) A more detailed discussion of the impact of leasing on communities, including all of the parameters discussed by the Eastern Montana Growth Task Force. The analysis can not simply make the assumption that per capita expenditures in the budgets will be the same (in a community that must double its physical plant)in a boom period as presently, when most facilities are paid for and community expenditures are largely for maintenance.

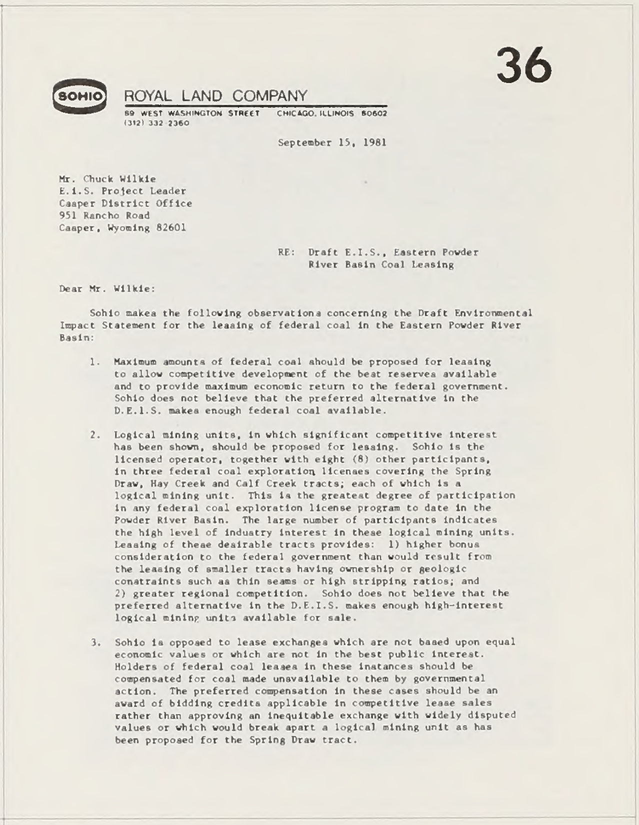
6) The EIS must include analysis of the impacts of leasing each tract, as discussed above.

7) The EIS must include references to current, available literature on reclamation and the impacts of leasing on groundwater, much of which differs from the conclusions and assumptions of the draft as written.

8) The EIS must use a proper comparison of alternatives, as discussed above; the no-action alternative "baseline" cannot be compared to additional production due to leasing only.

9) A retraction of the false characterization of responsibility for removal of the lands in the Powder River Resource Area Management Framework Plan Amendments from the activity planning process.

10)Appendices describing the methedologies used, as discussed above.



36

SOHIO ROYAL LAND COMPANY
59 WEST WASHINGTON STREET CHICAGO, ILLINOIS 60602
(312) 332-2360

September 15, 1981

Mr. Chuck Wilkie
E.I.S. Project Leader
Casper District Office
951 Rancho Road
Casper, Wyoming 82601

RE: Draft E.I.S., Eastern Powder
River Basin Coal Leasing

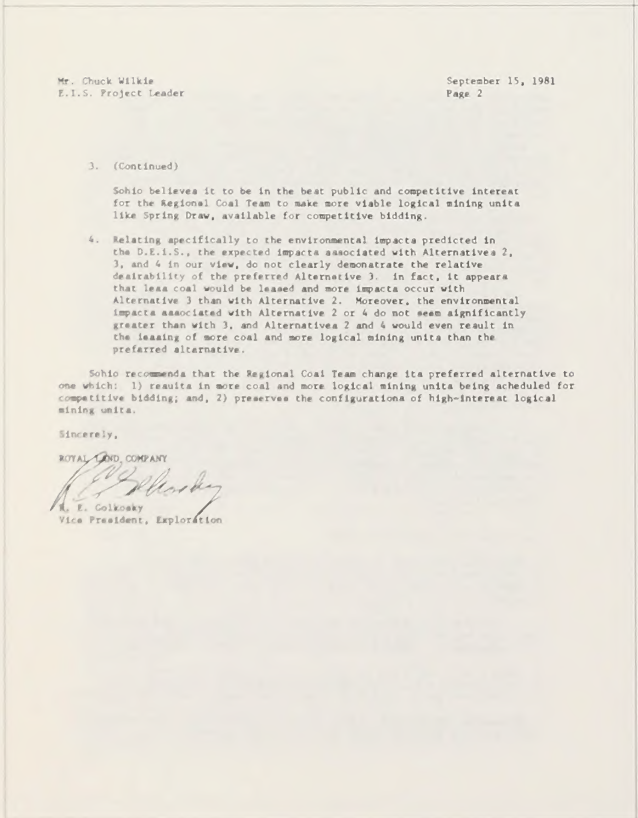
Dear Mr. Wilkie:

Sohio makes the following observations concerning the Draft Environmental Impact Statement for the leasing of federal coal in the Eastern Powder River Basin:

1. Maximum amounts of federal coal should be proposed for leasing to allow competitive development of the best reserves available and to provide maximum economic return to the federal government. Sohio does not believe that the preferred alternative in the D.E.I.S. makes enough federal coal available.

2. Logical mining units, in which significant competitive interest has been shown, should be proposed for leasing. Sohio is the licensed operator, together with eight (8) other participants, in three federal coal exploration licenses covering the Spring Draw, Hay Creek and Calf Creek tracts; each of which is a logical mining unit. This is the greatest degree of participation in any federal coal exploration license program to date in the Powder River Basin. The large number of participants indicates the high level of industry interest in these logical mining units. Leasing of these desirable tracts provides: 1) higher bonus consideration to the federal government than would result from the leasing of smaller tracts having ownership or geologic constraints such as thin seams or high stripping ratios; and 2) greater regional competition. Sohio does not believe that the preferred alternative in the D.E.I.S. makes enough high-interest logical mining units available for sale.

3. Sohio is opposed to lease exchanges which are not based upon equal economic values or which are not in the best public interest. Holders of federal coal leases in these instances should be compensated for coal made unavailable to them by governmental action. The preferred compensation in these cases should be an award of bidding credits applicable in competitive lease sales rather than approving an inequitable exchange with widely disputed values or which would break apart a logical mining unit as has been proposed for the Spring Draw tract.



Mr. Chuck Wilkie
E.I.S. Project Leader

September 15, 1981
Page 2

3. (Continued)

Sohio believes it to be in the best public and competitive interest for the Regional Coal Team to make more viable logical mining units like Spring Draw, available for competitive bidding.

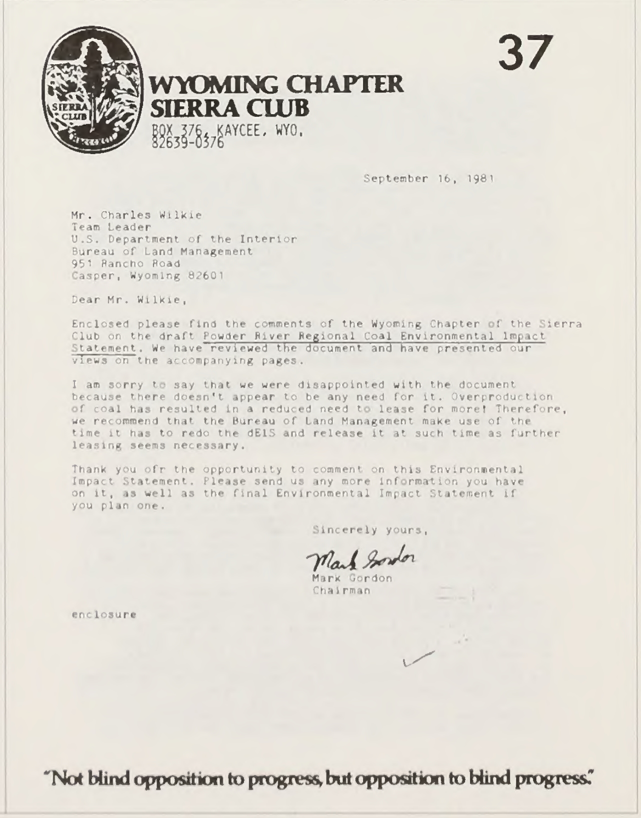
4. Relating specifically to the environmental impacts predicted in the D.E.I.S., the expected impacts associated with Alternatives 2, 3, and 4 in our view, do not clearly demonstrate the relative desirability of the preferred Alternative 3. in fact, it appears that less coal would be leased and more impacts occur with Alternative 3 than with Alternative 2. Moreover, the environmental impacts associated with Alternative 2 or 4 do not seem significantly greater than with 3, and Alternatives 2 and 4 would even result in the leasing of more coal and more logical mining units than the preferred alternative.

Sohio recommends that the Regional Coal Team change its preferred alternative to one which: 1) results in more coal and more logical mining units being scheduled for competitive bidding; and, 2) preserves the configurations of high-interest logical mining units.

Sincerely,

ROYAL LAND COMPANY

R. E. Colkosky
Vice President, Exploration



37

WYOMING CHAPTER
SIERRA CLUB
BOX 376, KAYCEE, WYO.
82639-0376

September 16, 1981

Mr. Charles Wilkie
Team Leader
U.S. Department of the Interior
Bureau of Land Management
951 Rancho Road
Casper, Wyoming 82601

Dear Mr. Wilkie,

Enclosed please find the comments of the Wyoming Chapter of the Sierra Club on the draft Powder River Regional Coal Environmental Impact Statement. We have reviewed the document and have presented our views on the accompanying pages.

I am sorry to say that we were disappointed with the document because there doesn't appear to be any need for it. Overproduction of coal has resulted in a reduced need to lease for more! Therefore, we recommend that the Bureau of Land Management make use of the time it has to redo the dEIS and release it at such time as further leasing seems necessary.

Thank you ofr the opportunity to comment on this Environmental Impact Statement. Please send us any more information you have on it, as well as the final Environmental Impact Statement if you plan one.

Sincerely yours,

Mark Gordon
Mark Gordon
Chairman

enclosure

"Not blind opposition to progress, but opposition to blind progress."

WYOMING CHAPTER
SIERRA CLUB

COMMENTS ON THE DRAFT
POWDER RIVER REGIONAL COAL
ENVIRONMENTAL IMPACT STATEMENT

Recent developments in the national energy picture have reduced the need for additional leasing of coal tracts. Therefore, the Wyoming Chapter of the Sierra Club suggests that the Bureau of Land Management redo its Environmental Impact Statement on federal leasing in the Powder River Basin. On the whole, the draft *Powder River Regional Coal Environmental Imapct Statement* suffers from incomplete -- or inadequate -- information, faulty or archaic assumptions, and careless consideration of important potential impacts to the people in northeastern Wyoming. The document would be vastly improved if these errors were corrected. As it stands, the EIS is nothing more than an outline of what a proper EIS should be. We hope these comments will assist the Bureau of Land Management in the revisions they should make to the text before it can be accepted as a valid decision maker's tool.

Demand for electricity has decreased over the past few yaers because the price per unit of electricity has risen so rapidly during that period of time. Consumers have started to conserve more than was expected by many utilities. In the period from 1973 to 1978 72% of our incremental energy supply came directly from conservation and efficiency improvements. From '79-'80 the United States did even more to conserve: about 97% of our economic growth came from conservation.[1] Last year that figure approached 110%; in other words, our efforts to conserve energy actually effected a reduction in the amount of power generated by utilities.[2]

Our ability to conserve major amounts of electricity has caught some utilities by surprise; many who did not accept this fact currently suffer severe economic hardship.[3] In fact, the finacial condition of many utilites has prompted Congressional review of the problem.[4] Most utility analysts will admit that the problem lies in massive overcapacity; utilities are not able to sell a portion of their electricity because there is no demand for the power. Since many utilities have an impressive reserve capacity currently, demand for the fuels to produce electricity has fallen off.

---

1. Amory and Hunter Sheldon Lovins, "Good News About Energy," *New Age* (October 1980): 31,32.
2. Personal conversation with Amory Lovins.
3. Basil L. Copeland, Jr., Walter W. Nixon, III, and Scott C. Trotter, "A Corporate Haze that Spells Trouble for Arkansas," *The Arkansas Gazette*, (August 31, 1980)
4. *ESC Weekly Bulletin*, (February 16, 1981): C3-C6; *ibid.*, (March 30, 1981): C5; *ibid.*, (April 6, 1981): C8-C9

"Not blind opposition to progress, but opposition to blind progress."

Demand for coal has fallen off. A new draft report from the Congressional Office of Technology Assessment concludes that 200 million more tons of coal are being reoduced than can be currently used. The report also states that production from existing mines will increase over the next several years in response to demand.[5] Consequently, since the market for coal is dependent on the market and not on Department of Energy estimates, some description of the market place, and its potential trends would be in order for this EIS. Simple-minded adherence to the DOE projects results in overleasing, overproduction, and unecessary hassle for coal companies who have to respect "diligent development" requirements.

Another factor which should be considered in the EIS discussion of the market is the recent cancellation of provisions in the *Fuel Use Act of 1978* which required utilities to convert to coal or uranium by 1990. Since these requirements have been dropped many plants which might have converted to coal are not going to -- that means there will be even less demand for Wyoming coal.

As for the rest of the document, clarification is needed. Figure 2-1 is almost entirely unexplained: ARe the PRLA's included in the baseline figure? The assumption that the No Acttion alternative will result in greater impacts to the community is unsupported in the EIS. THe impacts cited in the statement should be both generic (*i.e.*, regional) and sight-specific. More mention should be made of the attendant problems of coal mining growth: divorce, child abuse alcoholism, crime, etc.. Generally the document should be beefed up with more studies, more thought, and more accurate assumptions before it can be accepted as a good Environmetnal Impact Statement; for example, why is the reclamation of strip-mined lands assumed to be so successful? Granted there have been some notable successes in this field, but they are by no means universal. There are certain problems with reclamation in the Powder River Basin, and they should be covered in the EIS.

The Wyoming Chapter of the Sierra Club believes that the timing of this draft Environmetnal Impact Statement is inappropriate; an EIS on leasing in the Powder River Basin should be done when there is a demonstrable demand for the coal mined from these tracts.

---

5. Sierra Club, *National News Report*, (August 31, 1981): 3

Shell Oil Company

38

Two Shell Plaza
P. O. Box 2099
Houston, Texas 77001

Jack L. Mahaffey
Vice President Mining

September 14, 1981

CERTIFIED

Mr. Charles Wilkie
EIS Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, Wyoming 82601

Dear Mr. Wilkie:

Shell Oil Company appreciates the opportunity to comment on the Draft Powder River Regional Coal Environmental Impact Statement. The following comments enlarge in detail the statement (attached) delivered by our attorney, William C. Lowrey, to the hearing panel in Gillette, Wyoming on August 19, 1981.

We are concerned with the designation of Alternative 3 as the preferred alternative. We are, in fact, unable to find in the minutes of the Regional Coal Team meetings any action by the Team with respect to adopting your recommendation of a preferred alternative. Assistant Secretary Carruthers' decision of June 22, 1981, to set a regional coal leasing target of 1.4 to 1.5 billion tons can be equally satisfied by Alternatives 2 or 3 with their several variations. Thus, we believe the statements on pages 1 and 18 referring to the selection of Alternative 3B as the preferred alternative are not accurate. Further, we can find no basis for the summary statement on page 1 that "This Alternative offers the most favorable ratio of coal produced to environmental impacts generated and is the preferred alternative". Alternative 2 appears clearly superior in that regard.

The tracts contained in Alternatives 2 and 3 are similar except Alternative 3 removes the Spring Draw Tract and substitutes for it the Kintz Creek and Keeline Tracts; therefore, many of the impacts are identical. However, of those that differ, most seem to show the development of Spring Draw to have the far lesser impact. The following citations from the DEIS favor Spring Draw:

Table 2-1 (pages 22-24):

1. Eleven fewer wells would be destroyed; two fewer wells would be impacted.

---

2. 2,000 fewer acres of aquifers would be removed.
3. Two fewer springs would be destroyed.
4. Total suspended particulates would be 1,400 tons per year less.
5. 6,800 fewer acres would have to be reclaimed. (See Table 4-3, page 70 also).
6. Eight fewer unit trains per day would be required to move the coal.
7. Average grade crossing interruptions would be 55 minutes per day (at five miles per hour) less.

Page 56:

> "Spring Draw would increase TSP concentrations 1 ug/m^3 within one to two miles of the mine." "Kintz Creek and Keeline are predicted to add less than 5 ug/m^3 of TSP in their vicinity in 1990 and 1995."

Page 65:

> Alternative 2: "10) Loss of 1,200 acres for conversion of existing rural land uses to mine-related and urban uses."
> Alternative 3: "10) Loss of 12,200 acres for conversion of existing rural land uses to mine-related and urban uses."

Table 4-4 (Page 71)

> Cumulative acres of wildlife habitat disturbed by 1990 according to hunt areas are 114 less for Alternative 2.

Table 4-6 (Page 73)

> Average daily grade crossing interruptions at Torrington, Wyoming, would be one hour, 36 minutes less (at five m.p.h.) under Alternative 2 and car/train accidents per 100 years one less. Data for Miles City, Gillette, and Newcastle are the same for both alternatives.

There are a few factors cited in the DEIS favoring Alternative 3. These are:

Table 2-1 (Pages 22-24):

1. Alternative 3 would require 45 acre-feet less water for coal mining in 1990.

2. The energy produced/energy consumed ratio is 1.25 percent better for Alternative 3. This is based on an assumed heating value of 7800 BTU/pound for the Spring Draw coal. However, this difference would be nearly eliminated if the 8,183 BTU/lb coal value, from the adjoining Buckskin Mine, were applied (Eastern Powder River Coal DEIS, page BU-10).

Pages 58, 59:

> Impacts on wildlife appear somewhat greater at Spring Draw. However, the Tract Profiles suggest this may be a function of better documentation at Spring Draw as a result of data provided in the Permit Application from the adjoining Buckskin Mine.

Page 65:

> Twenty-seven fewer cultural sites would be disturbed under Alternative 3.

In addition to data presented in this OEIS, the TRACT PROFILES also indicate Spring Draw (Alternative 2) to be less sensitive than Kintz Creek/Keeline (Alternative 3). These last two tracts exactly equal the delineated Two Top Tract; hence, the Two Top Tract Profile was used in the following comparison.

Page 21:

> "Shallow groundwater exists and subirrigation appears to be occurring locally in the bottom of Kintz Creek and Black Thunder valleys. Groundwater is extremely poor quality." (See also page 42).
>
> No comparable section is in the Spring Draw Tract Profile.

Page 22:

> "The Kintz cemetery is located on Section 20, T.45N., R.79W. The cemetery and a 100-foot buffer zone would not be disturbed."
>
> No comparable mine design problem is to be found at Spring Draw.

Page 43:

> "The two producing oil and gas wells would be capped below the depth of the coal. Production lost by this action would be 62 barrels of oil per day and 127 million cubic feet of gas per day."

> There are no producing wells on the Spring Draw Tract.

Page 44:

> "The Swainson's hawk nest would be destroyed by mining. The loss of this pair of hawks would represent 20 percent of the county population (79 percent probability)".
>
> "Disturbance to the golden eagle nest during the breeding season (Feb. 15 - July 15) would cause nest abandonment."
>
> No comparable problems are to be found on the Spring Draw tract.

Adverse impacts to wildlife through the life of the mine not identified in the Two Top Profile, but covered in the Spring Draw Profile (page 42) include mule deer ("losses not likely to exceed 75 animals"), sage grouse ("losses would be minimal"), short-eared owls ("would not be critical") and a prairie dog town ("with no sign of black-footed ferrets").

We feel all the foregoing well demonstrates Shell's strong belief that mining in the Kintz Creek and Keeline areas will have a much more severe impact on the environment than at Spring Draw.

We also believe the selection of Alternative 3 is not responsive to the demonstrated high level of industry interest at Spring Draw. This has been most recently shown by the participation of nine companies in a Federal Coal Exploration License drilling program on this and adjacent tracts. No such program has been conducted at Kintz Creek/Keeline. It is our feeling that this is a clear indication of industry's judgment regarding the relative economic merits of these tracts. We maintain that leasing of Spring Oraw would result in more competition and a greater monetary return to the Federal government for coal leased than would result from leasing at Kintz Creek/Keeline. This would clearly be in the public interest. Another curious feature of Alternative 3B is, that of the six non-maintenance tracts included, three or 50% are Small Business set-asides and one of the three non-Small Business tracts, Duck Nest Creek, is essentially a maintenance tract (Ouck Nest Creek Tract Profile, page 5). We doubt that such a tract composition in this first, long-awaited Powder River Basin lease sale is within the spirit and intent of the Federal Coal Leasing Program or in the national interest.

We respectfully request that the preferred alternative under the DEIS be reevaluated in light of the concerns we have expressed. We believe that the preferred alternative should be modified to allow the leasing of the Spring Draw Tract.

Yours truly,

Jack L. Mahaffey

RCO:CRT:CC

Attachment

39

Interstate Commerce Commission
Washington, D.C. 20423

OFFICE OF POLICY AND ANALYSIS

September 15, 1981

Mr. Charles Wilkie
EIS Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, WY 82601

Dear Mr. Wilkie:

I am writing to forward comments of the Interstate Commerce Commission's Energy and Environment Branch (EEB) on the RLM Draft Environmental Impact Statement on the Powder River Coal Leasing Program.

Comment #1: Based on the information in Tables 1-1, 2-2, and 2-4, Alternative 3 would have 103 million tons (MT) of coal produced in Montana in 1995. Of that amount, 51 percent would be produced by existing mines. Of the remaining 50.8 MT, 12 percent would come from the Peabody noncompetitive lease in Rosebud County, 24 percent from the CX Ranch in Righorn County, and 65 percent (32.8 MT) from the Tongue River (TR) Railroad area, which includes the proposed Montco mine, the NW Otter Creek tract, and the Ashland Coalwood tract.

I believe that the preferred alternative overstates the amount of coal which would come out of the TR Railroad area by 1995. This is due to the following: (1) the figure of 103 MT of coal produced in Montana in 1995 is very probably an overstatement.[1] A demand analysis prepared in conjunction with the preparation of the ICC's TR Railroad EIS indicates that demand for Montana coal will be 90 MT in 1995; (2) a comparison of the quality of the coal resource in the TR Railroad area with that of the coal resource in the Decker and Colstrip-Sarpy Creek areas indicates that it is very unlikely that coal from the TR area would capture 65 percent of new coal sales in Montana; and (3) even if it were assumed that TR area coal could capture 65 percent of new Montana sales, it is very doubtful whether mines which might open in the TR area could achieve a production level of 32.8 MT in 1995, given the potential for delay which exists at the various stages of mine development.[2]

---

[1] Page 13 of the DEIS acknowledges that, even though the DEIS assumes that all tracts offered under an alternative would be leased and mined within the time frame covered in the DEIS, "it is recognized that in reality coal production will be governed by market demand."

Comment #2: Overstatement of 1995 annual coal production in the Tongue River area and understatement of 1995 production in the Decker and Colstrip-Sarpy Creek areas would result in overstatement of environmental impacts for the TR Area and an understatement of impacts in the Decker and Colstrip-Sarpy Creek areas. One example of such overstatement in the TR area can be seen on page F-4, Figure F-3. This figure shows that, under the preferred alternative, there would be 17 train movements per day (TPD) on the proposed TR Railroad in 1995. The EEB expects 1995 demand for TR area coal to generate only 8 or 9 TPD on the TR line.

Comment #3: For the tracts being considered for leasing in Montana and which BLM expects to accommodate new mines, the assumption is made that 40 percent of the related socio-economic impacts will occur in Powder River County and 60 percent in Rosebud County. Nowhere in the applicable tract profiles or in the DEIS itself is there any explanation of what this assumption is based on. Preliminary work on the ICC Tongue River EIS indicates that Custer County would also incur a fairly sizeable portion of such impacts. The distribution assumption made by BLM would thus overstate socio-economic impacts on Rosebud and Powder River Counties and understate impacts on Custer County. Furthermore, BLM makes the assumption that all of the increased population in Rosebud County related to the new mines would reside in Ashland. The EEB feels that the Colstrip area will receive a certain amount of population increase as a result of mining development in the Tongue River Valley. The reason for this is that within two years, the construction of Colstrip Units 3 and 4 will be complete and there will be surplus housing available in the town. Failure to take this into consideration results in overstatement of socio-economic impacts on Ashland.

Comment #4: The BLM DEIS does not account for trade patterns which result in induced employment in places such as Forsyth and Miles City, nor is it sensitive to location of indirect employment.

---

[2] Since assessment of Alternative 3 in the DEIS was based on Subalternative 3C, the numbers quoted above also are based on Subalternative 3C. However, the same comment would apply to the preferred Subalternative, which is 3B. Under this subalternative, Montana would produce 96.5 MT in 1995, 54.5 percent of which would come from existing mines. Of the remainder, 60 percent would come from the TR Railroad area (Montco mine, and the Coal Creek and NW Otter Creek tracts).

Comment #5: From examination of Figure F-3, it appears that the number of trains on each segment of the BN line through Miles City was derived by assuming that all of the traffic flowing into the line moves to or from the east. For example, the 13 TPD (Alternative 3) on the segment between Sarpy Jct and Nichols appears to be the sum of the 8 TPD on the segment to the west of that line and the 5 TPD generated by the Sarpy Creek spur line. If an east-west split had been assumed for the traffic flowing into the BN line, TPD on the various segments could vary substantially from that shown in Figure F-3, as would environmental impacts associated with those TPD levels.

In addition, Figure F-3 shown that TPD on the Nichols spur will be 10 TPD in 1995 under Alternative 1 and 19 TPD in 1995 under the other alternatives. However, as I underatand it, the tracts in the Nichols spur area which would be leased under Alternatives 2, 3, and 4 are expected by BLM to be maintenance tracts, which would not increase production over baseline 1995 levels. If this understanding is correct, I fail to see why TPD on the Nichols spur is different under Alternative 1 than it is under Alternatives 2, 3, or 4.

Comment #6: Generally speaking, the document is difficult to interpret for two reasons. First, the organization of tables and narrative is confusing. One has to shift back and forth between sections and chapters in order to assess the validity of numbers and to correlate figures to the narrative. As an example, the figures on coal production under the various alternatives are not readily apparent in the DEIS. Rather, they were derived using Tables 1-1, 2-2, and 2-4. A second problem with the document is that the methods employed in developing the impact analysis for various resources is not apparent. Most of this information was supposedly prepared and summarized in individual tract profiles. It would be helpful to have at least a summary of these tract profiles available as an appendix to this report.

Comment #7: Table 2-2 erroneously lists the Peter Kiewit CX Ranch as being in Rosebud County. It is in Big Horn County.

Comment #8: The amount of uncommitted federal coal reserves shown for the maintenance tracts in Tables 2-4 are not consistent in all cases with the numbers in Table 1-1 in the Federal uncommitted reserves column.

Comment #9: The DEIS assesses soil, vegetation and wildlife impacts on the assumption that all of the land within a given tract will be disturbed. As between 20 and 25 percent of a logical mining unit may not be disturbed by mining, the EEB feels a more realistic approach to the assessment of land disturbance impacts would be to calculate, based on a typical mine development, the total number of acres disturbed per million tons of coal mined, calculating also the number of acres to be used for mine facilities.

In addition, the DEIS should be modified to include information on differences in soil conditions and particular reclamation potential by area as well as the types of vegetation ranked in significance of vegetation lost.

Comment #10: The DEIS should contain a more thorough discussion of mitigating measures for terrestrial wildlife impacts, as well as of the potential impact of the expected increase in human population on wildlife. Both topics are treated rather summarily in the DEIS. Table 3-1 (p. 42) shows large amounts of wildlife habitat in acres, with no breakdown into major habitat types or a detailed discussion of the importance of these habitats. Furthermore, there is no explanation of how these large acreages were computed. On pages 58 and 59, there is a discussion of the loss of antelope and grouse, but again, there seems to be no discussion of how these losses were calculated. These figures appear to be worst-case speculations based on the assumption that local populations are at carrying caoacity, losses will be total, and that all information concerning wildlife in the area is known.

Comment #11, Cultural Resources:

There are a number of problems with analysis of the cultural resource as presented in the BLM document. The principal problem again concerns the method in which land disturbance was calculated. It would assume that there was total disturbance of all tracts, as opposed to actually looking at the mineable area of a tract with a typical mine plan. Furthermore, the BLM developed a density ratio for sites in the region based on the number of surveys that had been conducted in the area. Many of these surveys were conducted at different levels of intensity, and there was no attempt to adjust for this distinction.

Furthermore, in Table 4-5 (p. 72), which lists the number of sites to be impacted under each alternative, it is clear that while many sites could be potentially impacted by mine activity, federal and state statutes and regulations require only National Register eligible sites be considered in impact analyses and mitigation. There is no attempt to determine the total number of significant sites that would be disturbed and that could be considered a resource loss. While Appendix B, Table C-1 suggests the number of National Register eligible sites for some of the areas that have been surveyed, it is clear that the determination of eligibility has not been made for most sites that have been located in previoua surveys.

It also should be noted that there are some corrections necessary to the BLM's cultural resource sections. On page 59, the BLM states that:

> The State Historic Preservation Officers (SHPO) in Montana and Wyoming, and the advisory council will determine significance. Any site identified as

> potentially eligible for listing on the National Register would be protected (National Historic Preservation Act, Section 6).

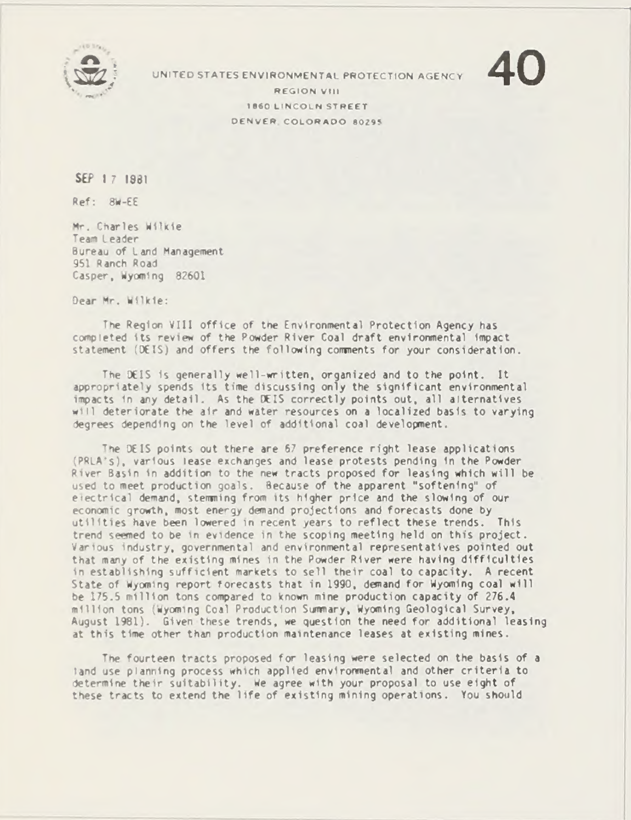
The Advisory Council on Historic Preservation does not determine eligibility for the National Register of Historic Places. The Keeper of the Register makes that determination. Moreover, by the BLM's own assessment, not all sites would be protected. Clearly, data retrieval of information from sites is the common mitigation practice and would be the suggested action on most sites in thia area. The BLM indicates at the bottom of page 59 that "Buried sites would be lost." Obviously, this would not be the case should data retrieval be successfully conducted on eligible cultural resources. Finally, the appropriate section of the National Historic Preservation Act is Section 106.

Thank you for the opportunity to comment.

Sincerely,

Carole Dawkins

Carole Dawkins
Community Planner
Energy and Environment Branch



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
1860 LINCOLN STREET
DENVER, COLORADO 80295

40

SEP 17 1981

Ref: 8W-EE

Mr. Charles Wilkie
Team Leader
Bureau of Land Management
951 Ranch Road
Casper, Wyoming 82601

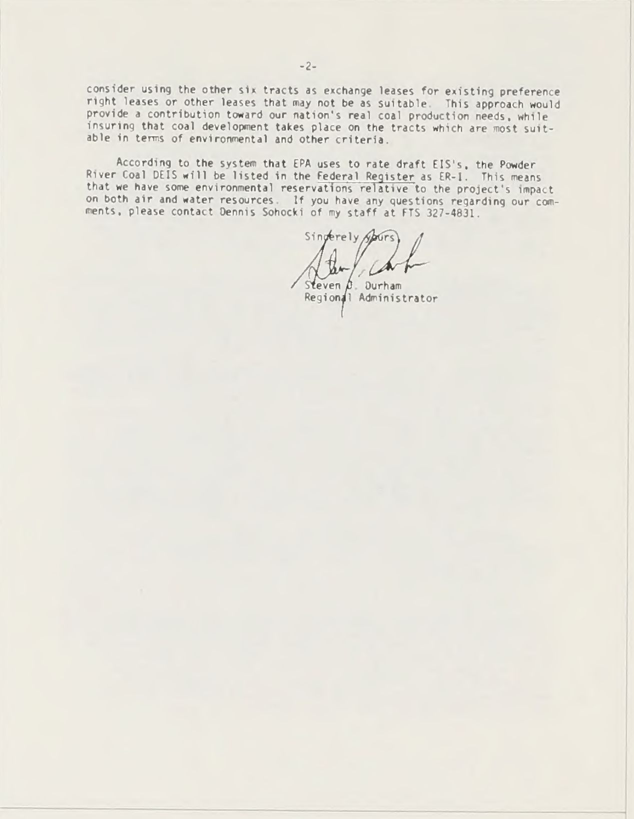
Dear Mr. Wilkie:

The Region VIII office of the Environmental Protection Agency has completed its review of the Powder River Coal draft environmental impact statement (DEIS) and offers the following comments for your consideration.

The DEIS is generally well-written, organized and to the point. It appropriately spends its time discussing only the significant environmental impacts in any detail. As the DEIS correctly points out, all alternatives will deteriorate the air and water resources on a localized basis to varying degrees depending on the level of additional coal development.

The DEIS points out there are 67 preference right lease applications (PRLA's), various lease exchanges and lease protests pending in the Powder River Basin in addition to the new tracts proposed for leasing which will be used to meet production goals. Because of the apparent "softening" of electrical demand, stemming from its higher price and the slowing of our economic growth, most energy demand projections and forecasts done by utilities have been lowered in recent years to reflect these trends. This trend seemed to be in evidence in the scoping meeting held on this project. Various industry, governmental and environmental representatives pointed out that many of the existing mines in the Powder River were having difficulties in establishing sufficient markets to sell their coal to capacity. A recent State of Wyoming report forecasts that in 1990, demand for Wyoming coal will be 175.5 million tons compared to known mine production capacity of 276.4 million tons (Wyoming Coal Production Summary, Wyoming Geological Survey, August 1981). Given these trends, we question the need for additional leasing at this time other than production maintenance leases at existing mines.

The fourteen tracts proposed for leasing were selected on the basis of a land use planning process which applied environmental and other criteria to determine their suitability. We agree with your proposal to use eight of these tracts to extend the life of existing mining operations. You should



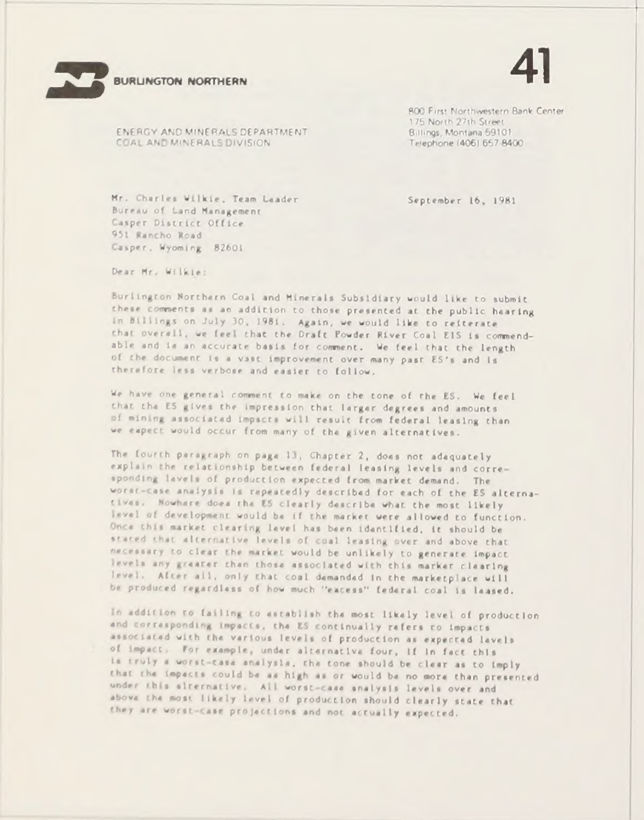
-2-

consider using the other six tracts as exchange leases for existing preference right leases or other leases that may not be as suitable. This approach would provide a contribution toward our nation's real coal production needs, while insuring that coal development takes place on the tracts which are most suitable in terms of environmental and other criteria.

According to the system that EPA uses to rate draft EIS's, the Powder River Coal DEIS will be listed in the Federal Register as ER-1. This means that we have some environmental reservations relative to the project's impact on both air and water resources. If you have any questions regarding our comments, please contact Dennis Sohocki of my staff at FTS 327-4831.

Sincerely yours,

Steven J. Durham
Regional Administrator



BURLINGTON NORTHERN

ENERGY AND MINERALS DEPARTMENT
COAL AND MINERALS DIVISION

800 First Northwestern Bank Center
175 North 27th Street
Billings, Montana 59101
Telephone (406) 657-8400

41

Mr. Charles Wilkie, Team Leader
Bureau of Land Management
Casper District Office
951 Rancho Road
Casper, Wyoming 82601

September 16, 1981

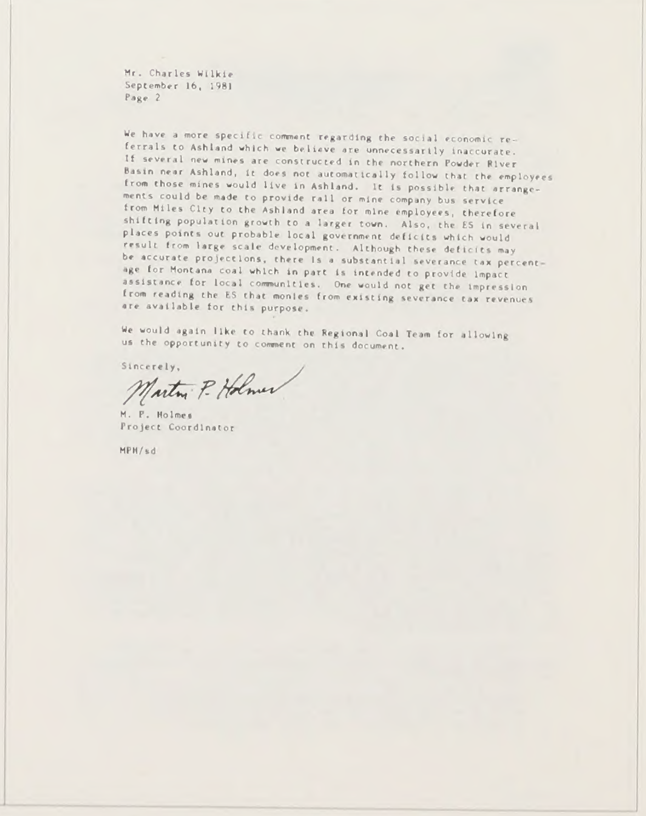
Dear Mr. Wilkie:

Burlington Northern Coal and Minerals Subsidiary would like to submit these comments as an addition to those presented at the public hearing in Billings on July 30, 1981. Again, we would like to reiterate that overall, we feel that the Draft Powder River Coal EIS is commendable and is an accurate basis for comment. We feel that the length of the document is a vast improvement over many past ES's and is therefore less verbose and easier to follow.

We have one general comment to make on the tone of the ES. We feel that the ES gives the impression that larger degrees and amounts of mining associated impacts will result from federal leasing than we expect would occur from many of the given alternatives.

The fourth paragraph on page 13, Chapter 2, does not adequately explain the relationship between federal leasing levels and corresponding levels of production expected from market demand. The worst-case analysis is repeatedly described for each of the ES alternatives. Nowhere does the ES clearly describe what the most likely level of development would be if the market were allowed to function. Once this market clearing level has been identified, it should be stated that alternative levels of coal leasing over and above that necessary to clear the market would be unlikely to generate impact levels any greater than those associated with this market clearing level. After all, only that coal demanded in the marketplace will be produced regardless of how much "excess" federal coal is leased.

In addition to failing to establish the most likely level of production and corresponding impacts, the ES continually refers to impacts associated with the various levels of production as expected levels of impact. For example, under alternative four, if in fact this is truly a worst-case analysis, the tone should be clear as to imply that the impacts could be as high as or would be no more than presented under this alternative. All worst-case analysis levels over and above the most likely level of production should clearly state that they are worst-case projections and not actually expected.



Mr. Charles Wilkie
September 16, 1981
Page 2

We have a more specific comment regarding the social economic referrals to Ashland which we believe are unnecessarily inaccurate. If several new mines are constructed in the northern Powder River Basin near Ashland, it does not automatically follow that the employees from those mines would live in Ashland. It is possible that arrangements could be made to provide rail or mine company bus service from Miles City to the Ashland area for mine employees, therefore shifting population growth to a larger town. Also, the ES in several places points out probable local government deficits which would result from large scale development. Although these deficits may be accurate projections, there is a substantial severance tax percentage for Montana coal which in part is intended to provide impact assistance for local communities. One would not get the impression from reading the ES that monies from existing severance tax revenues are available for this purpose.

We would again like to thank the Regional Coal Team for allowing us the opportunity to comment on this document.

Sincerely,

Martin P. Holmes

M. P. Holmes
Project Coordinator

MPH/sd

42

LAND MANAGEMENT
1981 SEP 17 AM 10 00
RECEIVED
CHEYENNE, WYOMING

Forsyth, Montana
Sept. 12, 1981

The Powder River Regional Coal Team
U. S. Dept. of Interior
Bureau of Land Management
2515 Warren Avenue
Cheyenne, Wyoming 82001

Gentlemen:

Thank you for sending me a copy of the Draft EIS regarding the prospects for leasing of coal in the Powder River region.

Due to the pressure of personal matters, I missed the reading of the deadline for questions which may be presented to you on October 2nd, in Billings. For this reason, I am asking your extension of that courtesy.

The map in the back of the EIS Draft volume clearly includes sections of privately owned land, property owned by our family corporation, underlain in part by Federally owned coal. This land is in 2N. 42E, adjoining Western Energy Company's Area D, at Colstrip.

Our family has sent word via letter, and by the form sent out by the Miles City B.L.M. that there is no Surface Owner Consent to mine the coal under those sections.

Why were they included in the map area of selected coal tracts?

The vagaries of the Groundwater section are certainly understandable. There has been no IN DEPTH study made of the adversities resulting from the mining of the shallow coal aquifer, either to the lower groundwater flows, or to the surface water. Nor has a factual and understanding study been made of the adverse impacts of the shallow coal aquifers to Agriculture.

In fact, the volume has been compiled with the major theme being LEASE THE COAL AT ALL COSTS, to the Agriculture of the area; to the unsuspecting public who really own the coal. Neither will ever find compensation for the loss they will have suffered at the hands of the opportunists within our State and Federal appointive offices.

It is my fervent hope the Powder River Regional Coal Team is not made up of people of such character.

Sincerely,
Patty Kluver
Patty Kluver

Will see you Oct. 2nd.

43

Testimony of Reed Zars, on the Powder River Draft EIS, Wednesday, July 29, 1981 - Casper, Wyoming.

REED ZARS: My name is Reed Zars. I am with the Powder River Basin Resource Council, and in the brief time that we have had this impact statement, around five days, I have at least been able to make a preliminary review of its sufficiency and would like to comment on that at least briefly.

First of all, the Resource Council, as many of you may know, is an agricultural group that has many members in Wyoming, many that live in the area that is to be leased or is proposed to be leased for additional coal, and I think we have a very specific interest in what happens today and what happens throughout this process.

First, I would like to reiterate our problems with the schedule. We just received this impact statement last week and would very much like to have more time to review the document. I understand there might be some additional hearings, and we would certainly support those. I think the turnout today is even indicative of the little time that the public has had to review this one.

Okay. Briefly, I would honestly say that this is the worst impact statement I have read. That's just pretty basic. I think it's clear that the impact statement began with the political objective--that is to lease more coal and only used the technical data to support a predestined conclusion. I think that's very sad, but there is no justification for additional coal leasing in the basin, and I think BLM, especially with the shift in administrations, is even harder pressed or harder put to find reasons to support additional leasing.

The only way, if you will look at this impact statement, is if you choose the high scenario for DOE's target and figure some 40,000,000 tons per year shortfall in 1990, but that high scenario is unrealistic, unimaginable, I would say, for the Powder River Basin.

On specifics, it certainly falls far short of analyzing any sort of demand for this coal. It picks up the DOE numbers, the 400,000,000 tons or whatever, and uses them as gospel when there is no backing support for why did they pick those numbers, especially in light of what's happening with electric growth rates today and industry statements themselves. I have chosen a couple out of the Casper Star Tribune out of the last month with Carter Mining saying we are not getting new business we had hoped for. There is a certain insecurity about the utilities, meaning utilities, because of the weak state of the economy which in turn means less electric power consumption, and statements by AMAX saying we are in a situation in which the industry is setting still because there are no markets. The goose is definitely not forever golden. Some of those eggs could turn to lead, and we have production capacity in place for the most part. The problem is who is going to consume it. These are recent statements by the industry themselves, and if the industry can't even support to themselves publicly at least a need for coal leasing, what are we doing here today talking about more coal leasing? Well, as I said before, there is quite a bit more symbolism than anything else in the production targets.

There was no mention that I could find of any effect on the Clean Air Act and the bills that are now in Congress which might restrict the act's effectiveness, modified, but, in other words, the Clean Air Act is back in Washington now up for review. It may be scaled down. That is certainly going to affect all western coal markets. If sulfur dioxide standards are modified, diminished, so that they open up eastern coal markets, you can be sure that that's going to affect the western coals. No mention whatsoever that I could find.

Also, and I believe in direct violation of the regulations pertaining to this impact statement specifically, there were no site specific analyses of the tracts there were chosen, and I could read that portion out of the regulations talking about this environmental impact statement. The statement shall consider both the site specific potential environmental impact of each tract being considered for lease sale and the intra-regional cumulative environmental impacts. Nothing in here talks about the impacts of the tracts themselves in any specific line. I think that's a significant problem with the impact statement.

The regulations also ask BLM to consider schedule alternatives, different schedules that you could lease on. Again, and I would submit for political reasons, there is only one schedule considered, and that's 1982, and it's either no leasing in 1982 or three scenarios for leasing in 1982. There is no alternative chosen for just maintenance leasing which our organization feels might be the most reasonable. That is to say leasing for operations that are in existence now, but not leasing for new mines, not opening up new areas when we already have a tremendous over-capacity in the Powder River Basin today, and all estimates are for that to continue into the future, but there is no alternative that I can pick and say, well, the Powder River Basin Resource Council will support this alternative, because it's not in there, but that should be considered, so the only other option I am given in this statement is to consider the no action which is a real gem because it says that all of the PRLA's are going to be mined instead, and I would like if any industry person is here, for them to comment on that as to whether all of the PRLA's are going to be mined whether that would represent in any way some sort of reasonable alternative.

HEARING OFFICER BESSINGER: Excuse me. Eight minutes is up.

MR. ZARS: Okay. The PRLA argument stands with the other alternatives. Maybe the panel can correct me, but as I read the alternatives the PRLA's aren't considered in two, three, and four. They are just considered in the no action, and I can't understand why that's done.

Okay. Finally, I was on the OTA, Office of Technology Assessment, Task Force last year with many other people from Wyoming including the industry representatives and the state geologists, and so forth. We looked at all of the undeveloped leases that are in the basin now. Okay. There are about 2.9 billion tons of undeveloped leases that we gave favorable development potential status to. Okay? That's just about double the amount that BLM wants to lease right now that we have setting in place that's not even being developed. Okay. By 1991 in a task force we figured that in the Powder River Basin there is 350,000,000 tons of capacity that would be available, and that was to meet the ICF demand which was an industry-sponsored demand study for 226,000,000 by 1990 or Gary Glass from the GS here in Wyoming with his 175,000,000 tons per year for 1990. Clearly we have the capacity. I would urge BLM and Secretary Watt and whoever else is in charge to consider these comments very carefully and that, in any event, a revised draft is needed for this impact statement beyond a shadow of a doubt because it falls far short of its requirements in law and its obligations to the public.

Thank you. Sorry, Glenn.

44

COMMENTS TO THE POWDER RIVER COAL TEAM ON THE POWDER RIVER REGIONAL COAL DRAFT EIS

DATE: July 30, 1981
LOCATION: Billings, Montana
SUBMITTED BY: Martin P. Holmes, Burlington Northern Coal and Minerals Subsidiary

Good afternoon. My name is Martin Holmes from the Burlington Northern Coal and Minerals Subsidiary. I would like to thank the panel for giving us the opportunity to offer our comments on the Draft Powder River Regional Coal EIS. The comments offered here today will be general in nature. We will submit more detailed written comments later during the comment period.

As you may know, Burlington Northern has just undergone a major reorganization. Our coal property management and development activities are now centered in a separate operating subsidiary based in Billings, Montana. As a result of this reorganization, we expect to take a more active role in the management of our coal resources. To do so, we know it is imperative for us to establish a closer working relationship with the Federal and State officers involved in coal management.

We have followed the efforts of the Powder River Regional Coal Team throughout this coal activity planning effort. The Regional Coal Team has made a commendable effort to reconcile the divergent views of the many parties having an interest in renewed Federal coal leasing in the Powder River Basin. We feel the Federal and State employees who are responsible for preparing the Draft EIS and all of the many associated documents to date are to be applauded for their efforts. The length and format of the Draft EIS is a substantial improvement over its unwieldly predecessors, and it ia adequate as a basis for comment.

My comments today will center around two issues--one dealing with the structure of the Draft EIS and the other with the proposed action itself.

The structural issue involves the treatment in the Draft EIS of the relationship between leasing levels and expected production levels and their resulting environmental impacts. The setting of the leasing target has apparently dictated the approach taken in developing estimated impact levels. In setting proper leasing targets, enough unobligated coal reserves must be made available to allow the marketplace to function properly to supply new demands by the least expensive reserves. To ensure this, the Regional Coal Team focused on the high DDE demand level for 1990. This is a reasonable starting point for the lease target setting process. However, we would argue that to allow the market to function properly, Federal leasing levels

should be set even higher than those needed to meet the DOE high estimate. The economic impacts of underleasing could be substantial. The impacts of overleasing are not as clearly discernible and are more easily mitigated.

Regardless of what leasing levels are included for study in the Draft EIS, we must not lose track of the fact that only that coal demanded by the marketplace will be produced. Increasing leasing targets to promote least cost production will not necessarily result in higher levels of production and increased environmental impacts.

The Draft EIS addresses this problem only in passing at the beginning of Chapter 2. Having pointed out the business reality, the Draft EIS then goes on to paint a picture of even larger impacts associated with increasing levels of leasing. It loses track of actual demand expectations. Figure 2-1 indicates that the DOE medium demand estimate is in fact lower than any of the leasing alternatives presented in the Draft EIS including the no-action alternative. We feel it is imperative that an effort be made to determine the impacts associated with the most likely level of development, i.e., the DDE medium, and that this impact level be the standard of comparison for the EIS. The other impact level estimates would then be put in a

better perspective as worst case levels only, and clearly not as the levels expected to result from the proposed actions.

We also wish to comment on the small business set aside tract that we understand is contained within alternative 3B, the perferred alternative. We support the concept of identifying limited numbers of tracts uniquely suited as set asides for development by small businesses. We feel that when the Regional Coal Team identifies potential mining units consisting totally of Federal coal, which it feels are suited for small business development, a set aside is appropriate. We do, however, question the advisability of setting aside Federal coal which can be best and possibly only mined in conjunction with substantial amounts of private coal not obligated to the set aside effort. In the case of the proposed Coal Creek, Montana tract, the potential mining unit involves significant reserves of Burlington Northern coal. This Burlington Northern coal is already under lease to another party who could not qualify as a small business. Therefore, we strongly suggest that the Regional Coal Team look to another area where it has an all Federal mining unit to offer for its small business set aaide. In the future, Burlington Northern would welcome the opportunity to discuss with the Regional Coal Team potential sites for small

business set asides that require Burlington Northern coal to form Logical Mining Units. We would hope to identify for you either unleased Burlington Northern coal which could be offered under some form of cooperative leasing or Burlington Northern coal which has already been leased to a small business lessee.

Again, I would like to thank the Regional Coal Team for allowing us the opportunity to comment. We deeply appreciate the work that has been done to date on the Powder River Regional Coal EIS, and we look forward to submitting more detailed written comments before the close of the comment period.

Thank you.

NORTHERN PLAINS RESOURCE COUNCIL

45

Main Office
419 Stapleton Building
Billings, MT 59101
(406) 248-1154

Field Office
Box 858
Helena, MT 59601
(406) 443-4965

Field Office
Box 886
Glendive, MT 59330
(406) 365-2525

TESTIMONY OF BILL MACKAY, JR.
for the
NORTHERN PLAINS RESOURCE COUNCIL

Powder River Region Draft Environmental Impact Statement:
Coal

July 30, 1981
Billings, Montana

NORTHERN PLAINS RESOURCE COUNCIL

Main Office
419 Stapleton Building
Billings, MT 59101
(406) 248-1154

Field Office
Box 858
Helena, MT 59601
(406) 443-4965

Field Office
Box 886
Glendive, MT 59330
(406) 365-2525

TESTIMONY OF BILL MACKAY, JR, ON THE POWDER RIVER DRAFT EIS
July 30, 1981, Billings, Montana

My name is Bill Mackay, Jr. I am from Roscoe, Montana, and I am a member of the Northern Plains Resource Council.

I am here representing NPRC members in Powder River and Rosebud Counties who could not make it today because of the ridiculously short, and illegal, notice provided for this hearing. That notice, unfortunately, makes this hearing on the Powder River Draft EIS a pointless waste of the taxpayers's money.

This hearing is unnecessary. The coal lease sale which this EIS is supposed to evaluate is unnecessary. There simply isn't any demand for the coal BLM proposes to lease, and there won't be any demand for twenty years or more. A coal lease sale now would be an unproductive giveaway, an invitation to energy companies to speculate with public coal at the expense of the taxpayer. It will not advance our country's goal of reaching energy self-sufficiency.

The existing mines in the region are producing barely half of the coal they are capable of producing. In Montana, we have had miners laid off at Decker, at Colstrip, and at Westmoreland's Absaloka mine. And now we face the possibility of a slowdown at the Spring Creek mine, which just opened.

Even the Department of the Interior has admitted that this huge overcapacity may exist into the 1990's, even if no

new mines are opened. In the West alone, well over 100 million tons of overcapacity exists. There are also about 8 billion tons of federal coal--enough to last the entire country for almost 10 years--in Powder River Basin leases already handed to the coal companies. Most of these leases don't even have mining plans, because there is no market for the coal.

We were amazed last year when, despite all of this, BLM proposed to lease 776 million tons more. That would be a ridiculous and irresponsible handout to the coal companies.

The massive, uncontrolled leasing of federal coal during the 1960's was the major reason that the Department of Interior had to stop leasing coal in 1971, and design a new leasing program to prevent rampant speculation by private companies with the public's coal. But instead of correcting past abuses, the Department of Interior now seems to be intent on covering them up. In fact, Secretary Watt wants to add to past mismanagement.

Not content to handout just 776 million tons of unneeded federal coal to the very same companies who are already leading speculators in public coal--companies like Consol, Shell, and Pacific Power and Light--Mr. Watt has doubled the giveaway, to one and a half billion tons of coal. In other words, on top of billions of tons in existing, non-producing leases, and in the face of a huge overcapacity in existing mines, Watt proposes to lease enough coal to open six major new mines and expand production at several more existing mines. One and a half billion tons is far more than needed to meet the Department of Energy's

highest projection of demand--a projection which is widely regarded as greatly inflated.

The abuse may not end there. Mr. Watt has strongly hinted that he is going to double the 1982 giveaway again. Even a billion and a half tons won't be enough in handouts.

This EIS doesn't even try to demonstrate the need for this lease sale. That is the most serious deficiency in the EIS, but it is certainly not the only one.

This EIS is inadequate for two basic reasons, and a host of specific reasons. First, it does not include an analysis of the impacts of leasing specific tracts of coal, as it is supposed to do. Second, it does not have a realistic analysis of the impacts of not leasing coal, which is also a requirement.

The EIS, incredibly, claims that not leasing will have a greater impact than leasing. I don't know what the reasoning behind that claim is supposed to be, because the figures in the EIS itself flatly contradict such a conclusion.

The absurdity of that statement is obvious. But the same twisted logic is found over and over in this EIS. For example, the EIS claims that aquifers ripped up by draglines will, miraculously, reappear stronger than before. Instead of destroying springs, as stripmining has done up to now, BLM says that stripmining may cause creation of new springs.

The EIS also manages to completely ignore the impact of a hundred miles of railroad running through the middle of

Testimony of Bill Mackay, Jr., page four
July 30, 1981

nearly every ranch on the lower half of the TongueRiver. The railroad would not be built unless the lease sale is held as proposed in this EIS, but the EIS doesn't discuss it.

And the EIS claims that reclamation in the Northern Great Plains has been proven successful--but it uses as proof studies that were done on reclamation potential, not on actual reclamation. The EIS blithely ignores studies conducted on actual reclamation efforts around the West that contradict its assumptions. Although not a single acre of land has yet been reclaimed to the standards set for release of reclamation bonds under Montana state law, BLM assumes that reclamation is an established success story.

There is not time today, or perhaps this year, to list all of the erroneous assumptions, mistakes, and gaps in this EIS. One more statement though, stands out. The EIS says, and I quote, "Energy production within the region is at an all time high and rapid growth is occurring." It is absolutely incredible that BLM can make this statement in the face of the huge slump facing the coal industry in this region. There isn't a single mention in the entire EIS of the current coal glut, the 50% overcapacity in area mines, the unemployment of area miners due to overleasing and overcapacity, or the billions of tons of federal coal already under lease. There is no mention of the unproductive, speculative profits that have been and still are being made at the taxpayers' expense with public coal.

This EIS is wholly inadequate, but that in itself is not surprising. What is surprising is that BLM would make such a

---

Testimony of Bill Mackay, Jr., page five

transparent attempt to whitewash Mr. Watt's 1.5 billion ton giveaway.

Testimony of Mr. Elliot, on the Powder River Draft EIS
Thursday, July 20, 1981-Billings, Montana

46

STATEMENT OF WESCO RESOURCES, INC.

My name is Steve Elliot, Vice President of Wesco Resources, Inc., a Billings based natural resource development firm. In reviewing the Powder River Draft EIS, I notice a discrepancy that I feel needs the attention of the BLM. In the minutes of the May 21, 1981 Regional Coal Team meeting in Casper, I notice that the RCT was considering three alternatives to the Ashland (Coalwood) tract.(see page 3 attached hereto) Among other things, the tract was to be divided because it had a coulee dividing the two tracts into Coal Creek and Cook Mountain. This was done to satisfy the Coal Creek Mining Co.'s request for a small business sale. Further, no additional environmental work was necessary because it did not enlarge the area.

Then on page 5 and 6 of the same minutes Tim Gallagher of the State of Montana moved that the Ashland tract be divided into two tracts. This passed. He further moved that the Coal Creek tract be set aside as a small business tract. Referring to page 3 again, Tim Gallagher recommends that the tract be set aside as a small business tract and a large business tract.

On page 18 of the draft EIS, the preferred alternative is 3B which eliminates the Cook Mountain tract. No reason is given as to why this is the preferred alternative. In the summary, alternative 3 is the preferred alternative because it has the most favorable ratio of coal produced to the environmental impacts. I submit that this is an error for the following reasons:

1. The impact of mining in the Ashland area is basically

Statement of Wesco Resources, Inc.
Page 2

the same if mining begins on the Coal Creek tract as if it took place on the entire tract.

2. Montana did not recommend that the Cook Mountain tract be eliminated.
3. As I stated in Casper, the Ashland (Coalwood) area is not a good place for a small business set aside tract because the area is a checkerboard (railroad-federal) coal ownership area. Other existing business investments have already been taken by other companies in the area. For instance, BN has already leased their coal to another major coal company. I still believe that the mining of isolated sections is uneconomic. The tract selected for small business will be isolated unless the coal and surface interests can be consolidated. There is no guarantee that this will happen.
4. Finally, not as a matter of sour grapes,but the EIS team should be aware of the recent article showing the sale of the Coal Creek Mining Co. to interests that own the Chicago White Sox. This suggests to me that a true small business arrangement as contemplated by the regulations does not exist. (see attachment)

As I stated in Casper as did others, I think the tract should be put up for competitive leasing. In the alternative, I feel that the Cook Mountain tract should not be eliminated from this sale. If it is leased, the likelihood of Coal Creek surviving as a small business tract and meeting the due diligence requirements is enhanced. This will happen because the large business interests in the area including Peabody, Burlington Northern, Cities Service and Consolidation Coal will have a significant impact on the timely development of coal in the Ashland area. Without their development, the economics won't exist for Coal Creek to mine 5 million tons a year.

Thank you for the opportunity to appear.

July 30, 1981

47

COMMENTS BY SHELL OIL COMPANY - MINING DEPARTMENT ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT PREPARED FOR THE POWDER RIVER BASIN

I am William C. Lowrey, attorney for Shell Oil Company, Mining Department, headquartered in Houston, Texas. Shell appreciates the considerable efforts that have been exerted by the BLM in preparation of this DRAFT Environmental Impact Statement for the Powder River Basin, and we welcome the opportunity to comment on the document while it is in this preliminary stage. Our comments will focus on the selection of the preferred Alternative. We are concerned that we are unable to verify that the RCT made any public decision selecting Alternative 3, or, in particular, Sub-alternative 3B as the preferred alternative. We are also concerned that the selection, however accomplished, is not supported by the information available to the Team. Data from the DEIS and tract profiles indicate that Alternative 2 is more environmentally acceptable than Alternative 3. Furthermore, current industry interest strongly suggests that competition would be more intense in an Alternative 2 sale.

The Powder River DEIS, on page 1, states:

> "The alternative selected by the Regional Coal Team (RCT) as the preferred alternative would offer for lease in mid-1982 14 tracts which would result in an average annual production of about 50 million tons."

Additionally, a statement appears on page 18 of the DEIS that "Sub-alternative 3B has been selected as the RCT's preferred alternative."

A reading of the minutes of recent RCT meetings shows that the Team made no public decision whatever with respect to a preferred alternative. Both Alternatives 2 and 3, with all their variations would closely fit the recommended coal leasing target of 1.4 to 1.5 billion tons adopted by the Assistant Secretary on June 22. It follows that the statements previously cited appear to be inaccurate. Furthermore, in our opinion such a selection is not supported by the data presented in the DEIS and the tract profiles.

We do not believe that Sub-alternative 3B is the most environmentally acceptable alternative to reach the leasing target. The tracts contained in Alternatives 2 and 3 are identical except Alternative 3 removes the Spring Draw Tract and substitutes for it the Kintz Creek and Keeline Tracts, therefore it is not surprising that in some respects there are no significant differences in the socio-economic or environmental consequences of the two alternatives. Nevertheless, data in the DEIS indicate that the selection of Alternative 2 with the inclusion of the Spring Draw Tract would result in a number of significantly reduced environmental impacts related to hydrology, air quality, disruption and reclamation of land, volume of rail traffic, loss of rural land use, and disturbance of wildlife habitat.

In contrast, the counterbalancing environmental factors favoring Alternative 3, those factors that must have been relied upon by BLM in selecting the preferred alternative, appear relatively minor and may be based in large part upon variations in the amount and quality of data utilized in the analysis.

The Tract Profiles for Spring Draw and Two Top (Kintz Creek/Keeline) contain additional environmental considerations covered only lightly or not at all in the DEIS. Significant differences in environmental impacts favoring selection of Spring Draw are related to mining of alluvial valleys, cultural disruption, disturbance of critical wildlife habitat, and interruption of existing oil and gas production.

We recognize certain of these factors have more weight than others. Nevertheless, any summation of the impacts would seem to favor the selection of Spring Draw over Kintz Creek and Keeline and we are at a loss to understand the summary statement that Alternative 3 "offers the most favorable ratio of coal produced to environmental impacts generated."

There are other factors that should be considered in selecting a preferred alternative. Industry has consistently expressed an interest in the Spring Draw Tract. A recently completed Federal Coal Exploration License drilling program on the Spring Draw Tract involved participation by nine companies. No such program has been conducted at Kintz Creek/Keeline. It is our feeling that this is a clear indication of industry's judgment regarding the relative economic merits of these tracts. We maintain that leasing of Spring Draw would result in more competition and a greater monetary return to the Federal goverment for coal leased than would result from leasing at Kintz Creek/Keeline. This would clearly be in the public interest. Another curious feature of Alternative 3B is, that of the six non-maintenance tracts included, three or 50% are Small Business set-asides. We doubt if that percentage in this first, important Powder River Basin lease sale is within the spirit and intent of the Federal Coal Leasing Program.

DEIS

We respectfully request that the preferred alternative under the DEIS be reevaluated in light of the concerns we have expressed. We believe that the preferred alternative should be modified to allow the leasing of the Spring Draw Tract.

Shell appreciates the opportunity to present our comments on the DEIS to this panel. We also plan to submit a more complete written comment which will reference the details on which our statements this evening have been based.

Thank you.

48

Testimony of Dr. Watt, on the Powder River Draft EIS, Wednesday, August 19, 1981 - Gillette, Wyoming.

DR. WATT: I am John Watt, Arvada, Wyoming, retired college professor and presently a rancher doing research on cattle hybridization.

I was hoping there would be many speakers to cover most of the topics so that I could simply add comments, wishing to speak as little as possible. However, there are two or three things that concern me especially. Recently, at the Bank of Commerce in Sheridan I noticed an article in the Casper paper saying that at Kemmerer, Wyoming, they were planning to extend a--well, I mean coal mine, strip mine, to 1,000 feet depth and leave the hole open for water storage.

The last time Dr.--I mean Senator Hanson spoke in Sheridan just before his retiring he stated that mining, strip mining, in Germany was to a depth of 1,200 feet. At that meeting I asked him if he knew anything about any leaving of the coal holes open for storage and suggested that that was something he had to look into. A depth of that kind would certainly be a means of restoring water to aquifers which might have been disturbed. I, therefore, very highly recommend that we give consideration to that and doubt--and I have unfortunately not seen a copy, but doubt that this is here.

Governor Hathaway proposed while he was governor that they build a dam two and a half miles above Clear Creek on Clear Creek to store water, 135 feet of water, to be sold to Gillette and to coal companies looking especially towards getting a gasification plant in this area. Thus, if you have any significant coal under the water the depth might compensate for the height of the dam.

Now, we might apply also to Moorhead. We have a well about a quarter of a mile south of the south footing of this Hathaway Clear Creek dam site. The well is 500 feet deep. We have the logs from 200 down to 500. In that 300 feet there are two seams of coal, each of which are 39 feet thick and some others thinner.

A local boy has--was employed by some eastern money to put together a lot of coal in this country. He studied many of the wells in the area as recorded in Cheyenne. He found that there were characteristically, over the entire area from Kendrick Siding on Clear Creek and Arvada on the Powder River down to the Montana line, consistently 100 feet of coal above or below the 200-foot level and above the 200-foot level there were irregularly local additional veins, thus corresponding to the log of our well.

In addition to that we have a well about 200 feet deep about a mile north and in that one we have 40 feet of coal which would come in that surface variable area. Thus, it appears likely that there would be from a hundred to 140 feet of coal submerged by the Hathaway dam and reservoir site.

Now, if we took that hundred--140 feet of coal out of there we would probably have more storage because the--the water plan depth would be 135 feet at the dam, but that would taper off to zero at the upper end leaving an average of somewhere around 60 feet. Thus, a hundred feet of coal taken out would provide more water storage and on a permanent sort of basis.

There was an earlier plan for a railroad from the Kendrick Siding which was the point in which the study was made down Powder River on the east side to a point about three miles above the Hathaway dam stie. There it crossed the river and went on down to a point about a mile below the dam site. At that point it turned up Cabin Creek, crossed the divide into the--to the north slope and down Otter Creek to Ashland, Montana, thus traversing an 80-mile strip of coal all the way from the juncture to the completion of that line.

Now, if that--if they had a hole there instead of a dam, reservoir, that railroad line could still be built and be an immediate shipping point for all that coal, simply by making a fill as they remove the line, the railroad line, over to the fill which would carry it. If this now were extended, there is one proposed also from Miles City to Ashland. If both of these were constructed, Gillette then would have a coal shipping railroad to Chicago which would be at least 100 miles shorter.

Now, concerning the mineability of Powder River coal, this part where I was hoping that somebody else might comment particularly, but being unsaid I guess I will have to initiate it much as I would hate to. Concerning the mineability of Powder River coal, it is very important that we understand how washouts heal themselves, a term which I doubt any of you have ever heard.

After seventy years observing the environment and many years of that as a post-graduate person with a Ph.D minor in plant ecology and broad studies in the field of biology, the term "fragile alluvial valleys" just has never sounded right to me. I have been very badly disturbed by it.

About four or five years ago a young fellow from one of the Colorado universities stopped by the ranch looking for information he could use in a master's thesis on the topic of self-healing of washouts and streams. That gave me a word to think. In other words, we usually think in terms of words, and it immediately cleared that feeling of unrest in my mind about the unsatisfactory nature of that term.

Now, the nearest thing I know to a fragile alluvial valley is Powder River along, possibly, with Platte.

HEARING OFFICER CURRIER: Excuse me , Doctor, could you summarize the rest of it, please?

DR. WATT: Yes. I have about four more, five more, lines.

This would be the nearest thing. About 1905 Frank Kelsey, who later moved down into Montana and was a Montana senator and the man who proposed the Moorhead Dam at a meeting of our local neighbors said, "After all, Powder River is a pretty good old stream. It's true that it takes land away on one side, but it gives it right back to you on the other." He did not say, but could have and should have that it gives it back at a lower and more useful layer which I submit to you is an example of one of the numerous ways in which rivers self-heal themselves.

49

Testimony of Ed Swartz, on the Powder River Draft EIS, Wednesday, August 19, 1981 - Gillette, Wyoming.

MR. SWARTZ: My name is Ed Swartz. I am a rancher north of Gillette, Wyoming, and I have been asked to say a few words tonight on behalf of the Powder River Basin Resource Council of which I used to be on the board of directors. I have not been for several years. They asked me to say that they remain opposed as they did before to additional coal leasing when there is such a tremendous quantity of coal already under lease, and one of the main points that they wanted me to make is that, according to the Wyoming Geological Survey done by Gary Glass in 1980, that nine years from now in 1990 the state total demand for coal will be one hundred seventy-five and a half million tons and the probable 1990 mine capacity, same year, will be 276.4 million tons, which would show that existing mines would only be operating at 63 percent of capacity.

I think you probably heard and seen these figures before and yet the BLM seems determined, and Department of the Interior, to go ahead with coal leasing regardless of what the demand will be.

Basically, those are my comments for the Powder River Basin Resource Council. I have additional comments I would like to make on behalf of myself as a rancher in the area where some preference right lease applications will be issued to a company very soon.

Because of my former activities with the Powder River Basin Resource Council, I got a copy of this Draft Environmental Impact Statement on coal which I probably wouldn't have obtained otherwise. While gleaning through it on Page 27, I happened to see that--Page 27, that on my ranch--parts of my ranch by 1990 they are estimating a mining of four and a half million tons of coal, by 1995 24,000,000 tons of coal. I have not given my permission to anybody to do this. There has been nobody talked to me about coal since 1972. The company that will get these preference right lease applications, which they intend to mine from the looks of this Draft Statement, when they were last on my ranch drilled several exploration holes, one of which was very close to my house. Shortly thereafter, I lost my good house water.

Thinking my well had caved in, I drilled a new water well and completely cemented the old one shut. That didn't help the water supply. It would make you sick to drink it and you couldn't wash a load of clothes because of the rust.

After checking I found out that this company had not separated any of the water sands with a plug and consequently I felt that after spending over $10,000 out of my own pocket trying to get the water back I felt that it was their obligation to prove to me that they had plugged the holes which they said they didn't plug the holes, and they said they would be glad to pay me for my damages if I could prove it in court.

This is a company that you guys are going to grant a lease to, that they don't have to bid on competitively, and that they don't have to pay very much money for, and I think there should be some way to issue these preference right lease applications to companys that are going to be good citizens.

This same company in the late Sixties and early seventies, as I understand it, was working in the Bull Mountains of Montana. At that time they were running over ranchers, abusing them, leaving gates open, actually threatening them with physical damage for trying to keep them off of their own ranch lands, and I think if you will check, I don't know the exact date because I do not have the article, but it was the source of an article in the National Geographic magazine. If you have ever been associated with them, they don't print anything that is not true. This particular company was certainly abusive to ranchers in the community in the Bull Mountains area of Montana.

I think, like I said before, it behooves you to find what kind of corporate citizens you are issuing these basically free leases to before you just turn them loose.

As I said before under the other comments that--that the mining capacity is going to far exceed the demand. About every article you read shows that.

Scared the hell out of me in the Casper paper Sunday. Study says Wyoming faces big bust by 2020. They are going to lose their market for coal according to one study which apparently is done by reputable people. People are going to go to alternative energy sources as much as possible. The fossil fuel market is going to be down. I might not be here in 2020, but I don't want my children stuck paying taxes for a bunch of things that we are building now and over-building like schools and hospitals, public facilities in Gillette and Campbell County, Wyoming, that the landowner, the rancher, who is trying to make a living is going to be stuck paying off farther down the line.

Don't over-lease. Don't over-build the coal mines. I think you are very close to getting on the verge of that. There are quite a lot of existing coal mines in Campbell County right now. They are probably coming quite close to reaching or will come close in the next years to reaching the carrying capacity of the railroads. They are going to have to build more railroads. I don't think we need to build more mines. I think, if anything, any more leases are issued or anything is done it should be in the area of keeping existing mines operating, keeping them with a good supply of coal. Don't operate the mines at 63 percent. Operate the mines at 80, 85 percent if you can possibly get there. Don't build more new mines that are going to be operating at fifty percent where they are all going to go broke. It's a tremendous investment for these companies to build a mine, and I think with the actions that you are coming close to taking in issuing so many more new leases you are very apt to help this bust that we are being faced with, according to this study.

I have on my ranch probably one of the finest deer heards in the entire area if not in the state and maybe in the world as far as quantity goes. Wildlife is brushed over so lightly that I can't believe it, and I don't want you to take my word for this. I wish you would talk to the local Game and Fish biologists, wardens. My ranch has probably been repopulating the entire northern part of Campbell County after the, quote, death losses that occurred in '78, '79 or whatever the actual years were listed in the report under wildlife.

There is another little item I would like to bring up at this time. I am not sure if it was under your authority or under somebody else's, but about two weeks ago starting at about 6:30 in the morning until about 10:30 there was an airplane flew low and slow and circled my ranch and several neighbors' ranches, just kept flying low and slow, nobody around. None of my neighbors knew what was going on. None of them knew who it was, why they were doing this. It turns out that it was a survey being done of eagles' nests.

About two days later a guy walks into my house and says, "Oh, we have been surveying your ranch for eagles' nests. Do you know you have two?" I said, "No, I have three." I said, "Why didn't you come and talk to me before you wasted taxpayers' dollars and upset everybody in the country out there?" There was one of my neighbors actually ready to shoot him down, had his rifle out. He was so tired of that airplane circling. He didn't know whether he was poaching, if he was coyote hunting, what he was doing, but he was hired by, I believe, the U.S. Fish and Wildlife Service.

Like I said , I don't know if it has anything to do with this statement, but if it does, it behooves you people for whatever reason this survey was being taken to notify the ranchers, because we still feel that we have a right to control what goes on over our place, and if four hours an airplane circled, it would make you very nervous if you owned a ranch, I am sure, but to me they wasted their money. They spent four hours circling the country finding two eagles' nests and I have three. He said, "The people up around Recluse," but nobody--we aren't around Recluse, and none of my adjoining neighbors who I phoned knew anything about it.

I would like to talk on a lot more, but I would like to close with the statement that I reiterated two or three times. Please don't over-lease the coal. Don't get so many mines working that none of them can operate efficiently. If the bust comes, don't--don't have facilities built so much on the tax rolls and under bond issues that the people who are planning on staying here cannot make a living.

I appreciate the time that you gave me this evening to make these comments and thank you very much.

MR. SWARTZ: Okay. Ed Swartz again. I noticed one thing on that map that was issued that the Gas Draw Oil Field, part of which is on my ranch, was not listed on this, and about 1977, 1978, or '79, I don't know exactly when, that was the ninth largest oil field in the State of Wyoming in terms of oil produced, and those figures I got in the Casper Star Tribune annual energy issue, and I think the map maker really slipped there when he doesn't even realize there is an oil field in the middle of a possible lease tract of coal.

That's basically the only thing I forgot. Thank you.

50

Testimony of Mr. Matthias, on the Powder River Draft EIS, Wednesday, August 19, 1981 - Gillette, Wyoming.

MR. MATTHIAS: My name is Robert Matthias. I am with the Royal Land Company in Denver, Colorado. Royal is a subsidiary of the Standard Oil Company of Ohio popularly known as Sohio.

I appreciate the opportunity to be here tonight and to make comments regarding the Draft Environmental Impact Statement on the Powder River coal leasing.

Further clarification of the Royal Land Company—Royal, as the gentleman from Shell mentioned, is the lead company in the exploration program which was recently concluded on the Spring Draw, Camp Creek, and Hay Creek tracts north of Gillette.

While I am here this evening I would like to make four main points. The first is that Royal feels that the more federal coal that is leased, the better. The Regional Coal Team will not cause coal to be mined. The marketplace will. Coal will not be mined and sold that the marketplace will not accept. The Regional Coal Team can only have negative impacts or impede the market mechanism by not leasing enough coal or by leasing uneconomic coal leaving unleased coal which is more competitive.

Royal does not believe that the alternative recommended in the DEIS makes enough coal available for sale.

The second point I would like to make is that Royal feels that the more logical mining units or LMU's that are available for lease, the better. As I mentioned earlier, we are conducting the exploration program on the Spring Draw, Hay Creek, and Camp Creek tracts which have a total of nine major companies as participants. I believe that shows the high level of industry interests in logical mining units.

The leasing of logical mining units leads to higher prices for federal coal than does smaller tracts having adjacent ownership problems or other physical constraints such as poor quality, thin seams, or generally high stripping ratios which prevent that tract or any given tract from being a viable economic entity or logical mining unit. Royal does not believe that the recommended alternative in the DEIS makes enough LMU's available for sale.

The third point I would like to make is that Royal Land Company is opposed to lease exchanges. Federal coal lease owners should be compensated for coal made unavailable due to government action such as the construction of Interstate 90. Compensation, however, should be in terms of bidding credits to be used in competitive bidding rather than as a wholesale exchange for LMU's such as was proposed earlier in Utah or by covering up what would otherwise be an LMU as has been proposed in the Powder River Basin such as the Spring Draw Tract. Although compensation for I-90 coal has been required by Congress, Royal believes it is the Regional Coal Team's responsibility to ensure the competition for tracts is fostered by maintaining as many tracts as possible as LMU's and by ensuring that as many LMU's as possible are put up for sale. If those or if any proposed lease exchanges have played any role in the tract ranking, the tract selection, or evaluation of the alternatives considered in this DEIS, this is unfortunate.

Royal would like to see more coal and more LMU's leased than proposed under the recommended alternative.

The fourth and last point that I would like to make relates specifically to the environmental impacts predicted in the DEIS. The expected impacts associated with Alternatives 2, 3, and 4, and the various sub-alternatives do not in Royal's opinion clearly show the relative desirability of the recommended alternative. In fact, it appears that less coal will be leased and the impacts will be greater with the recommended alternative than with Alternative 3B. The environmental impacts associated with Alternative 4 do not seem significantly greater than with 3B, but would result in the leasing of more coal and more LMU's than the recommended alternative.

Royal Land Company respectfully recommends that the Regional Coal Team change its preferred alternative to one which results in more coal and more LMU's being leased and that, henceforth, the economics of coal production be given much more consideration than in the past.

Again, I thank you for the opportunity to make comments on the Draft Environmental Impact Statement.

My notes are not in the form that you would find usable and I will follow this up with a detailed written letter to you in the next few days.

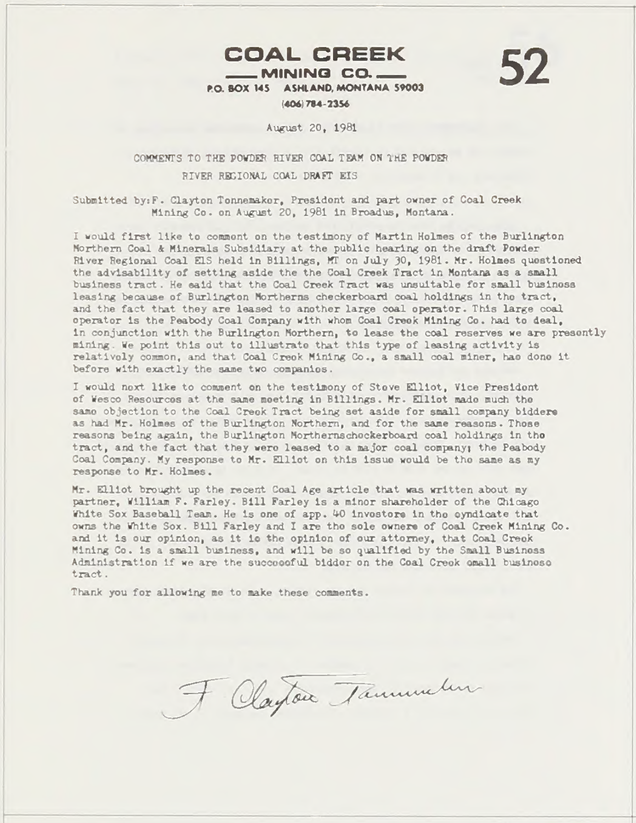
51

Testimony of Mr. Symonds, on the Powder River Draft EIS, Wednesday, August 19, 1981 - Gillette, Wyoming.

MR. SYMONDS: My name's M. G. Symonds, and I am affiliated with the Powder River Basin Resource Council, and is it okay for me to proceed?

It seems we already have quite a bit of access in the past to the Powder River Basin now and leasing at this time when there is a low coal market would seem to give the government a problem of low rate of return and allow a small group of companies to acquire leases quite cheaply and, thus, lease up a large amount of property and may hamper the development of the coal, so locking up the coal, and so on, I don't think would do anything to benefit the economy of the local area or the country--would end up in disruption of the local agriculture, socio-economics.

I am finished.



COAL CREEK
MINING CO.
P.O. BOX 145 ASHLAND, MONTANA 59003
(406) 784-2356

52

August 20, 1981

COMMENTS TO THE POWDER RIVER COAL TEAM ON THE POWDER
RIVER REGIONAL COAL DRAFT EIS

Submitted by:F. Clayton Tonnemaker, President and part owner of Coal Creek Mining Co. on August 20, 1981 in Broadus, Montana.

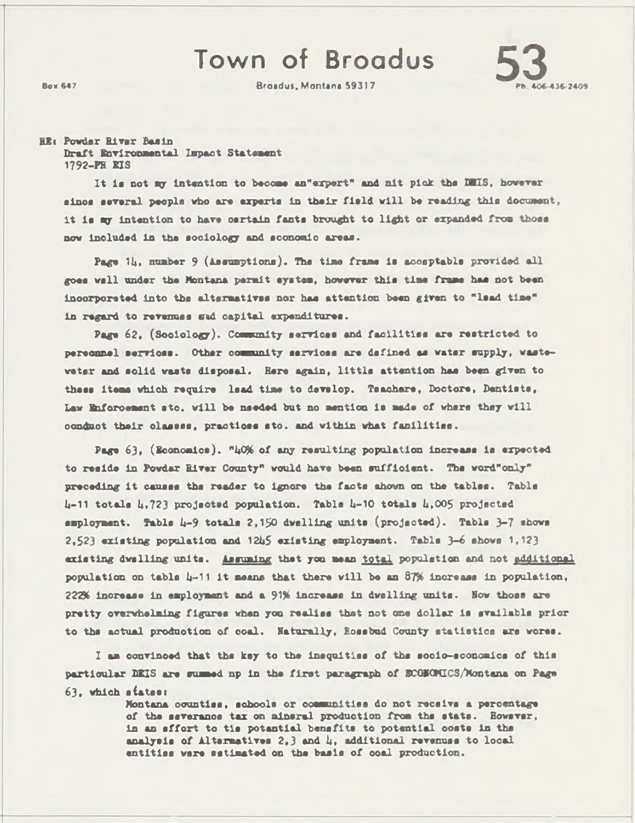
I would first like to comment on the testimony of Martin Holmes of the Burlington Northern Coal & Minerals Subsidiary at the public hearing on the draft Powder River Regional Coal EIS held in Billings, MT on July 30, 1981. Mr. Holmes questioned the advisability of setting aside the the Coal Creek Tract in Montana as a small business tract. He said that the Coal Creek Tract was unsuitable for small business leasing because of Burlington Northerns checkerboard coal holdings in the tract, and the fact that they are leased to another large coal operator. This large coal operator is the Peabody Coal Company with whom Coal Creek Mining Co. had to deal, in conjunction with the Burlington Northern, to lease the coal reserves we are presently mining. We point this out to illustrate that this type of leasing activity is relatively common, and that Coal Creek Mining Co., a small coal miner, has done it before with exactly the same two companies.

I would next like to comment on the testimony of Steve Elliot, Vice President of Wesco Resources at the same meeting in Billings. Mr. Elliot made much the same objection to the Coal Creek Tract being set aside for small company bidders as had Mr. Holmes of the Burlington Northern, and for the same reasons. Those reasons being again, the Burlington Northernscheckerboard coal holdings in the tract, and the fact that they were leased to a major coal company; the Peabody Coal Company. My response to Mr. Elliot on this issue would be the same as my response to Mr. Holmes.

Mr. Elliot brought up the recent Coal Age article that was written about my partner, William F. Farley. Bill Farley is a minor shareholder of the Chicago White Sox Baseball Team. He is one of app. 40 investors in the syndicate that owns the White Sox. Bill Farley and I are the sole owners of Coal Creek Mining Co. and it is our opinion, as it is the opinion of our attorney, that Coal Creek Mining Co. is a small business, and will be so qualified by the Small Business Administration if we are the successful bidder on the Coal Creek small business tract.

Thank you for allowing me to make these comments.

F Clayton Tonnemaker



Town of Broadus

Box 647 Broadus, Montana 59317 Ph. 406-436-2409

53

RE: Powder River Basin
Draft Environmental Impact Statement
1792-PR EIS

It is not my intention to become an"expert" and nit pick the DEIS, however since several people who are experts in their field will be reading this document, it is my intention to have certain facts brought to light or expanded from those now included in the sociology and economic areas.

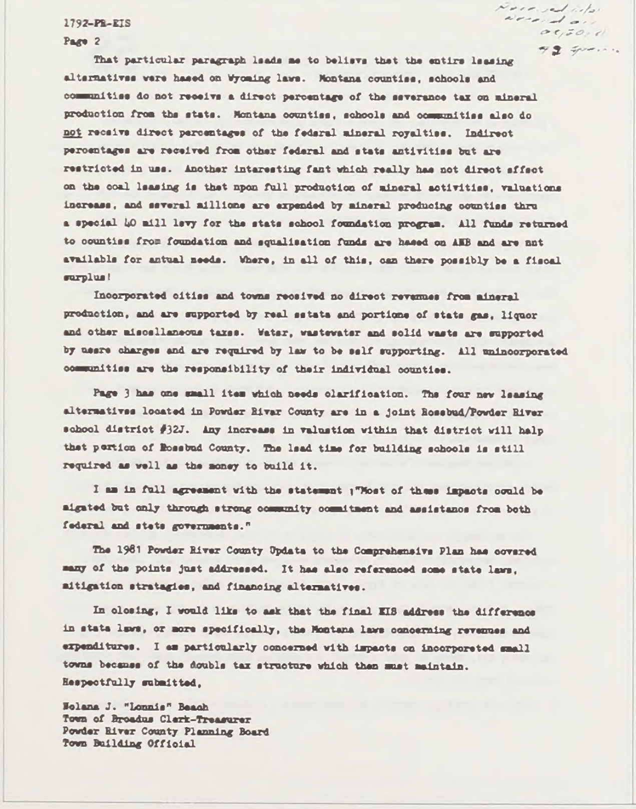
Page 14, number 9 (Assumptions). The time frame is acceptable provided all goes well under the Montana permit system, however this time frame has not been incorporated into the alternatives nor has attention been given to "lead time" in regard to revenues and capital expenditures.

Page 62, (Sociology). Community services and facilities are restricted to personnel services. Other community services are defined as water supply, waste-water and solid waste disposal. Here again, little attention has been given to these items which require lead time to develop. Teachers, Doctors, Dentists, Law Enforcement etc. will be needed but no mention is made of where they will conduct their classes, practices etc. and within what facilities.

Page 63, (Economics). "40% of any resulting population increase is expected to reside in Powder River County" would have been sufficient. The word"only" preceding it causes the reader to ignore the facts shown on the tables. Table 4-11 totals 4,723 projected population. Table 4-10 totals 4,005 projected employment. Table 4-9 totals 2,150 dwelling units (projected). Table 3-7 shows 2,523 existing population and 1245 existing employment. Table 3-6 shows 1,123 existing dwelling units. Assuming that you mean total population and not additional population on table 4-11 it means that there will be an 87% increase in population, 222% increase in employment and a 91% increase in dwelling units. Now those are pretty overwhelming figures when you realise that not one dollar is available prior to the actual production of coal. Naturally, Rosebud County statistics are worse.

I am convinced that the key to the inequities of the socio-economics of this particular DEIS are summed up in the first paragraph of ECONOMICS/Montana on Page 63, which states:

> Montana counties, schools or communities do not receive a percentage of the severance tax on mineral production from the state. However, in an effort to tie potential benefits to potential costs in the analysis of Alternatives 2,3 and 4, additional revenues to local entities were estimated on the basis of coal production.



1792-PR-EIS
Page 2

[illegible]

That particular paragraph leads me to believe that the entire leasing alternatives were based on Wyoming laws. Montana counties, schools and communities do not receive a direct percentage of the severance tax on mineral production from the state. Montana counties, schools and communities also do not receive direct percentages of the federal mineral royalties. Indirect percentages are received from other federal and state activities but are restricted in use. Another interesting fact which really has not direct effect on the coal leasing is that upon full production of mineral activities, valuations increase, and several millions are expended by mineral producing counties thru a special 40 mill levy for the state school foundation program. All funds returned to counties from foundation and equalisation funds are based on ANB and are not available for actual needs. Where, in all of this, can there possibly be a fiscal surplus!

Incorporated cities and towns received no direct revenues from mineral production, and are supported by real estate and portions of state gas, liquor and other miscellaneous taxes. Water, wastewater and solid waste are supported by users charges and are required by law to be self supporting. All unincorporated communities are the responsibility of their individual counties.

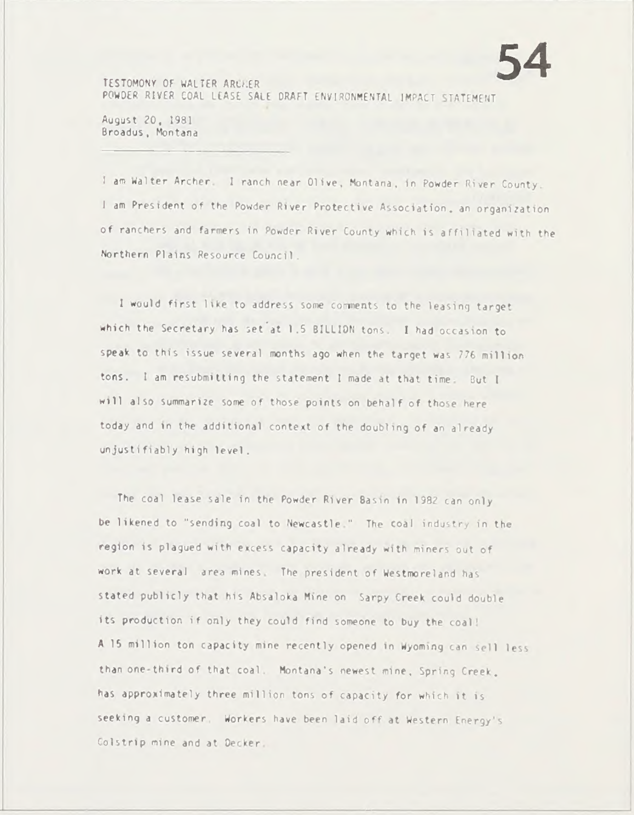
Page 3 has one small item which needs clarification. The four new leasing alternatives located in Powder River County are in a joint Rosebud/Powder River school district #32J. Any increase in valuation within that district will help that portion of Rosebud County. The lead time for building schools is still required as well as the money to build it.

I am in full agreement with the statement ;"Most of these impacts could be migated but only through strong community commitment and assistance from both federal and state governments."

The 1981 Powder River County Update to the Comprehensive Plan has covered many of the points just addressed. It has also referenced some state laws, mitigation strategies, and financing alternatives.

In closing, I would like to ask that the final EIS address the difference in state laws, or more specifically, the Montana laws concerning revenues and expenditures. I am particularly concerned with impacts on incorporated small towns because of the double tax structure which then must maintain.
Respectfully submitted,

Nolana J. "Lonnie" Beach
Town of Broadus Clerk-Treasurer
Powder River County Planning Board
Town Building Official



54

TESTOMONY OF WALTER ARCHER
POWDER RIVER COAL LEASE SALE DRAFT ENVIRONMENTAL IMPACT STATEMENT

August 20, 1981
Broadus, Montana

I am Walter Archer. I ranch near Olive, Montana, in Powder River County. I am President of the Powder River Protective Association, an organization of ranchers and farmers in Powder River County which is affiliated with the Northern Plains Resource Council.

I would first like to address some comments to the leasing target which the Secretary has set at 1.5 BILLION tons. I had occasion to speak to this issue several months ago when the target was 776 million tons. I am resubmitting the statement I made at that time. But I will also summarize some of those points on behalf of those here today and in the additional context of the doubling of an already unjustifiably high level.

The coal lease sale in the Powder River Basin in 1982 can only be likened to "sending coal to Newcastle." The coal industry in the region is plagued with excess capacity already with miners out of work at several area mines. The president of Westmoreland has stated publicly that his Absaloka Mine on Sarpy Creek could double its production if only they could find someone to buy the coal! A 15 million ton capacity mine recently opened in Wyoming can sell less than one-third of that coal. Montana's newest mine, Spring Creek, has approximately three million tons of capacity for which it is seeking a customer. Workers have been laid off at Western Energy's Colstrip mine and at Decker.

Walter Archer
Page Two

That is the situation today. What about ten years from now? Is the sale needed for 1991? Every indication is NO. There are literally billions of tons of already-leased undeveloped federal coal in the Powder River Basin. Of this, 2.9 BILLION tons of reserves have favorable development potential. The potential capacity of those existing leases, preference right lease applications and nonfederal mines in the West far exceeds the likely range of demand for coal over the next 10-20 years.

We now see the Department of Interior in Washington, DC, advocating that diligent development requirements for federal lessees be weakened or entirely dropped. It is little wonder that as the 1.5 BILLION Powder River coal sale approaches, Interior should seek to save itself the embarrassment of having to cancel leases that are not being developed because there is no market!

The Secretary this year actually doubled the tonnage to be offered from the Basin. He is now hinting at actually raising that target by an additional BILLION tons!

One of the most apalling things about the Draft Environmental Impact Statement is that it does not even attempt to justify a lease sale of the size contemplated! But then any credible assessment of the market, the over-capacity of existing mines, and the tremendous production potential from existing, undeveloped leases leads to only one, obvious conclusion: The lease sale cannot be justified.

Walter Archer
Page Three

This fundamental flaw in the Draft EIS is compounded throughout the document by an analysis of impacts that is superficial, oftentimes incomplete and in some cases ridiculous.

For example, the conclusion that leasing 1.5 BILLION tons of coal (and opening six major new mines therefrom) would somehow cause less impacts than not leasing 1.5 billion tons is nonsensical. The document never justifies this ridiculous conclusion. Like the coal target, it defies rational explanation.

Broadus and Ashland are the two Montana communities most directly affected. Both communities would be hit hard with boom-type impacts. The EIS, however, overlooks entirely the capital costs of new facilities such as roads, schools, and hospitals, assuming that per capita expenditures will be the same in 1990 as today. In every other boom town in the West costs have skyrocketed because of the need for building new facilities. Montana has a coal tax that would provide some help, but even with that the local taxpayer, on the average picks up 68% of the tab for coal tax supported projects.

The EIS does not account for the impacts on local government budgets of mines that may open without federal leases in this area.

Having left out major components of the equation, the EIS happily projects a budget surplus in Broadus. Such happy surpluses have been predicted in the past for boom communities - but the fact is that there has never been a boomtown with budget surpluses in the region.

Walter Archer
Page Four

In the areas of groundwater impacts, agricultural impacts, water quality impacts, and land use impacts the document is similarly rosy; and its assumptions (where those are described) are equally deficient!

If ever there was a document that needed to go back to the drawing board, this is it. As I have already pointed out, the need for the sale simply isn't there and thus there is time to at least take an honest and informed look at what we're trading off in these communities, in agricultural productivity, in economic stability and in our future before any lease sale is held.

55

TESTIMONY OF MARY DANIELS, ON THE POWDER RIVER DRAFT EIS
AUGUST 20, 1981 - Broadus, Montana

I am Mrs. E. M. Daniels. We have a ranch east of Birney. I am a member of the Northern Plains Resource Council, and President of the TRI COUNTY Rancher's Asso.

I recieved a copy of the Powder River Draft EIS on August 5th - 5 days after the hearings were held in Billings. This does not surprise me, I'm sure the BLM is not all that proud of this document anyway.

I have been involved in the issue of strip mining since the publication of the North Central Power Study, that monsterious plan which apparently has been abandon. For the last 10 years I have, as have others equally concerned with agriculture, given testimony at these BLM public hearings. I have faithfully tried to read and digest these EIS drafts, finals, etc, and gentlemen, in all these years we have not ONCE evidence our comments or written testimony was ever seriously considered by you, or that we influenced your decisions whatsoever! Because of this, it is apparent, decisions have already been made before hearings, or public input is received.

A glaring example of omission is never mentioning the plan for the lower Tongue River railroad and Otter Creek spur, which would necessitate condemnation of land.

Try to imagine how refreshing it would be if some responsible public official would say forcefully!!!!!! "I recommend no leasing of federal coal when there is nearly 7 billion tons of federal coal already under lease in the Powder River Basin. Further leasing (contrary to statement in this document) would cause more impact, not less, it would deplete our water, condemn land, hinder agriculture, and above all, there is only a demand for profits from federal coal, NOT justifiable national NEED for coal."

- How very fitting, truthful and courageous a statement like that would be!!

56

Testimony of Mr. Hayes, on the Powder River Draft EIS, Thursday, August 20, 1981 - Broadus, Montana.

MR. HAYES: My name is Art Hayes, Jr. I am a rancher from Birney and I am representng myself.

I feel this whole document is totally unnecessary for there is no real market for this coal at this time. I also feel that your ground water, your sociological, and other sections of this are totally inadequate. I can see no way that you can disturb that amount of land and ruin that much water and that many aquifers and only say that it's very minimal destruction of water and runoff into Otter Creek and the Tongue River. I think this lease--it shouldn't be called a BLM leasing program. It should be called the great American giveaway.

Thank you.

57

Testimony of Mr. Golder, on the Powder River Draft EIS, Thursday, August 20, 1981 - Broadus, Montana.

MR. GOLDER: I am Nick Golder. I live near Colstrip. My address is Forsyth, Montana.

I will write this down.

MR. McKEE: Thank you.

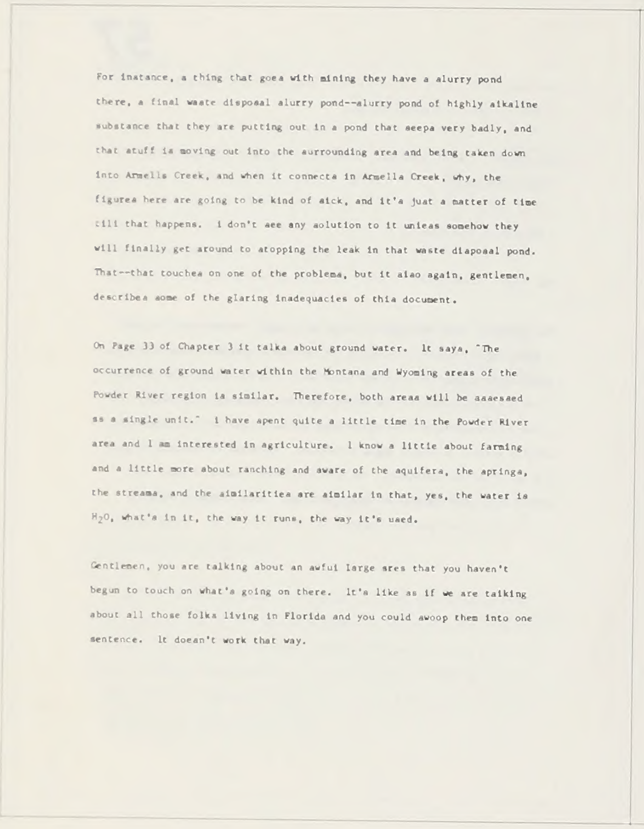
MR. GOLDER: The Scriptures inform me, gentlemen, that we should be real careful about involving or judging the motives of people. I am trying to avoid being judgmental of anyone's motives. The Scriptures also say that we should judge a tree by its fruit, and this particular EIS, Powder River EIS, strikes me as being the kind of fruit that was picked awfully, awfully green. It hasn't begun to develop. You have already picked it and put it in the statement. You have the barest basics of where you should start, and you put it into a document. It's fantastic to me.

Living near Colstrip, why, I have been to quite a few mines in the general area and I have watched coal development. I have been particularly interested in the hydrology and reclamation aspect of the thing. I have a ranch and I have the audacity to think that I know a little bit about the land and some of what's under it in the form of water.

On Page 2 of this EIS it says, "Reclamation success has shown to be good." I guess I wasn't an English teacher. "Reclamation has shown to be good, although some areas could require more intensive and costly management." This is a document written by a fellow by the name of Packer in 1974. Having kept up with reclamation thing as it's gone on I think anybody that's actively involved in reclamation that, anyway, the reclamation people that I have been talking to who are getting something done will tell you that in 1974 they really didn't know anything about reclamation and I believe you gentlemen need to take a long hard look at that, and as far as that goes if you will look into Mr. Packer's document it's--it's based on theory if you will read it carefully. He says so. He makes no bones about that. He thinks because of this kind of soil, this and that and something else, this should work. That's fine. He also has a lot of reservations about problems that could happen. It seems that when it says here that "Reclamation success has shown to be good" maybe somebody didn't read clear through that document. I don't quite know where they get it all but, anyway, this is one of the--this is typical of this whole document. Somebody read someplace in the funny papers about it and then wrote it down it seems to me.

On Page 17 it talks about surface water. It says, "The potential increase in dissolved solids concentration in streams would raise from one-tenth percent in Rosebud Creek to four percent in Armells Creek. However, these increases would have no significant impact on current uses of the water or on aquatic biology downstream, no measurable effect on the salinity of the Yellowstone River." Armells Creek is a small creek and before the mining started over there it was an intermittent stream. It ran when it rained and when there was snow melt. Now it runs the year around. There is waterlogging problem, a severe waterlogging problem, on Armells Creek for many miles. It's killed off big, old cottonwoods that anybody can drive through there and see that it took them many years to grow. Now they are all dead. It's made a frog pond out of what was good hay meadows and it's progressing on down the creek.

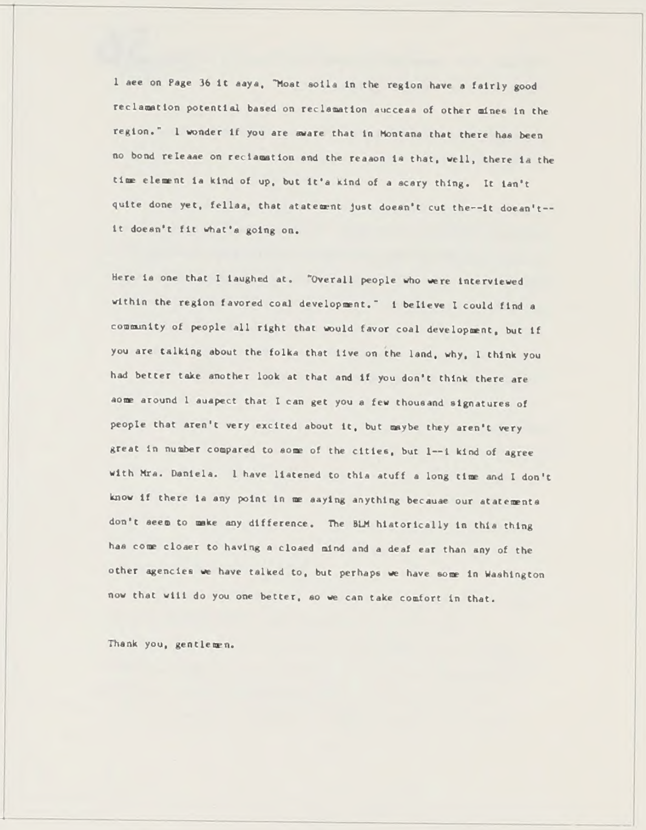
I think if you would look into the Montana State Lands EIS on--that they put out on Area E, these--several of these problems are addressed in the kind of language that you are accustomed to reading. I think it would be an eye opener to you--that I could go on for quite some time.



For instance, a thing that goes with mining they have a slurry pond there, a final waste disposal slurry pond--slurry pond of highly alkaline substance that they are putting out in a pond that seeps very badly, and that stuff is moving out into the surrounding area and being taken down into Armells Creek, and when it connects in Armells Creek, why, the figures here are going to be kind of sick, and it's just a matter of time till that happens. I don't see any solution to it unless somehow they will finally get around to stopping the leak in that waste disposal pond. That--that touches on one of the problems, but it also again, gentlemen, describes some of the glaring inadequacies of this document.

On Page 33 of Chapter 3 it talks about ground water. It says, "The occurrence of ground water within the Montana and Wyoming areas of the Powder River region is similar. Therefore, both areas will be assessed as a single unit." I have spent quite a little time in the Powder River area and I am interested in agriculture. I know a little about farming and a little more about ranching and aware of the aquifers, the springs, the streams, and the similarities are similar in that, yes, the water is H_2O, what's in it, the way it runs, the way it's used.

Gentlemen, you are talking about an awful large area that you haven't begun to touch on what's going on there. It's like as if we are talking about all those folks living in Florida and you could swoop them into one sentence. It doesn't work that way.



I see on Page 36 it says, "Most soils in the region have a fairly good reclamation potential based on reclamation success of other mines in the region." I wonder if you are aware that in Montana that there has been no bond release on reclamation and the reason is that, well, there is the time element is kind of up, but it's kind of a scary thing. It isn't quite done yet, fellas, that statement just doesn't cut the--it doesn't--it doesn't fit what's going on.

Here is one that I laughed at. "Overall people who were interviewed within the region favored coal development." I believe I could find a community of people all right that would favor coal development, but if you are talking about the folks that live on the land, why, I think you had better take another look at that and if you don't think there are some around I suspect that I can get you a few thousand signatures of people that aren't very excited about it, but maybe they aren't very great in number compared to some of the cities, but I--I kind of agree with Mrs. Daniels. I have listened to this stuff a long time and I don't know if there is any point in me saying anything because our statements don't seem to make any difference. The BLM historically in this thing has come closer to having a closed mind and a deaf ear than any of the other agencies we have talked to, but perhaps we have some in Washington now that will do you one better, so we can take comfort in that.

Thank you, gentlemen.

1

Purpose and Need

Issue 1-1:

The premise that new coal leasing is necessary is dubious.

Raised by:

Richard Cauble, National Wildlife Federation (Letter 26)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Walter Archer, Powder River Protective Association (Statement 54)

Response:

The DEIS need analysis rests upon the need established in the Federal Coal Management Program, Final Environmental Impact Statement (FEIS) which is incorporated by reference into the present document on page 5 under Purpose and Need. A discussion of the methodologies used by the DOE in projecting demand can also be found in the FEIS. The actual derivation of the leasing target was published in the *Federal Register* Notice dated December 3, 1980.

2

Scoping, Baseline, and Assumptions

Issue 2-1:

The proposed North Antelope Mine was not included in the baseline.

Raised by:

Terry O'Connor, North Antelope Coal Company (Letter 22)

Response:

The North Antelope Mine has been included in the DEIS baseline for cumulative analysis. The site of the North Antelope Mine will be on existing state and federal leases between two PRLA groupings. These PRLA groupings are the North Antelope and the Rochelle area.

Issue 2-2:

Shell's proposed Young's Creek Mine was not included in the baseline.

Raised by:

Robert M. Ballou, U.S. Fish and Wildlife Service (Letter 3)

Response:

This was acknowledged on page 7 of the DEIS; however, it is not felt that the population changes that will result from the Young's Creek Mine would justify restructuring the baseline. The Crow/Shell DEIS, published by the Bureau of Indian Affairs, projects a maximum increase in Big Horn County employment of 490 (primary and secondary) during construction in 1987, under the proposed action. This would result in an increase of 36 residents in Big Horn County and 400 residents in Sheridan County, Wyoming. When compared to 1990 baseline population in the Powder River DEIS this equates to a 0.2 percent increase for Big Horn County and a 1.2 percent increase for Sheridan County. The maximum increase projected for Big Horn County employment in 1998 is 1,120 (primary and secondary), which would result in population increased of 70, in Big Horn County, and 1,400 in Sheridan County. Comparing this to the Powder River DEIS baseline population for 1990 it can be seen that this is only a 0.5 percent and a 4.2 percent increase for Big Horn and Sheridan Counties respectively.

Issue 2-3:

What is the source of information on which projected PRLA production is based?

Raised by:

John D. Wiener, Sierra Club (Letter 24)

Response:

Projected production for the PRLAs is based on information contained in initial showings submitted by PRLA holders, and in 1990 is only 12 percent of the projected baseline production.

Issue 2-4:

It is erroneous to assume that the PRLAs will be in production by 1990.

Raised by:

Philip L. White, Texas Energy Services, Inc. (Letter 13)

John D. Wiener, Sierra Club (Letter 24)

Richard Cauble, National Wildlife Federation (Letter 26)

Response:

The 67 PRLAs, which form the 15 mine groupings in Table 2-2, have been held in abeyance since the early 1970s. Without exception, the initial showings, which were submitted on the mine groupings by the mid-1970s, envisioned production by the early 1980s. The Secretary of the Interior has announced that all PRLAs will be processed by December 1984. As a result, the following assumptions were made in the DEIS;

1) The PRLAs in Wyoming would be processed in 1982.

2) A three year licensing period would follow leasing.

3) Construction would require two years.

4) The mines would reach full operation capacity by 1990.

Issue 2-5:

It is dubious to assume that all PRLAs and existing leases will be developed.

Raised by:

Richard Cauble, National Wildlife Federation, (Letter 26)

Response:

The reasons for assuming that the PRLAs will be fully functional by 1990 are contained in response number 2-4 above. Inclusion of other leases in the baseline is based on research into mining and other industrial planning, as well as a concensus of state and local officials. At this point there is the distinct possibility of existing leases, which could form potential mines, but which were not included in the baseline. If existing leases or PRLAs are not developed the need or demand for new leasing is increased.

Issue 2-6:

Overestimating the impact of the No-Action Alternative blurs the contrast between the impact of stable or moderate coal development and that of massive new coal development.

Raised by:

Richard Cauble, National Wildlife Federation, (Letter 26)

Response:

The baseline consists of the best information available from the best sources available, namely industrial and mine planning as well as a consensus among state and local officials. There can be no doubt that the baseline does represent massive new coal development; however, the DEIS still manages to present clear, concise comparisons among the alternatives, as can be seen in Table 4-10, 4-11, and 4-12, on employment, population, and budget levels, respectively.

Issue 2-7:

The DEIS does not fully explore and evaluate all reasonable alternatives such as maintenance leasing, break-through leasing, land trading, or phase-in leasing.

Raised by:

Richard Cauble, National Wildlife Federation, (Letter 26)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

The DEIS has clearly and concisely evaluated the alternatives which are reasonable to the proposed leasing action. Alternative leasing arrangements were considered in the FEIS on the Federal Coal Management Program.

Potential alternatives which pertain to the proposed lease actions, are limited for the following reasons.

1) Maintenance leasing would increase mine life, not production.

2) Break-through leasing would increase mine life and not production.

3) Land trading is already practiced to the extent possible under our Federal Land Management Program.

4) In a sense, the 1982 lease sale followed by a 1984 lease sale should be considered "phased in leasing"; however, any form of phased in leasing would need to meet DOEs 1990 production goal.

5) PRLAs are to be processed by 1984 and therefore must be considered in the baseline as to their effect on the 1990 production level.

In short, there is a projected need (high and medium) for a given level of production in 1990. After comparing projected production capacity to that need, and the availability to coal leasing, the alternatives were formulated.

Issue 2-8:

The three year lead time assumption (DEIS page 14) appears substantially flawed.

Raised by:

Philip L. White, Texas Energy Services, Inc. (Letter 13)

Response:

Contact with Wyoming's Industrial Siting and the Department of Economic Planning and Development provided the following information: If a company accomplishes the various required studies concurrently, licensing and permitting can be done within 18 to 24 months. It has been done in less than 18 months. Coal mines can, and do, arrive at full production capacity within 5 or 6 years after leasing. In the worst case it would require 8 or 9 years.

It should be noted that market conditions and sales contracts determine whether a mine will produce, as well as production levels. If the mines in question do not produce at full capacity it would be an indication that the lease level selected by the RCT was too high. However, assumptions in the DEIS on lead time and production levels remain valid.

Issue 2-9:

TESI questions the need for production maintenance tracts for existing mines with reserves in excess of 300 million tons.

Raised by:

Philip L. White, Texas Energy Services, Inc. (Letter 13)

Response:

There may be some confusion over the number and type of tracts considered in the DEIS. There are 5, 6, and 11 tracts under Alternatives 2, 3, and 4, respectively, which could result in new mine openings. There are also 5 exchanges and noncompetitive leases, in the baseline, which were authorized under congressional legislation. Finally, there are 8 maintenance tracts contained in Alternatives 2, 3, or 4. It should be noted that the maintenance tracts are assumed to extend mine life only and do not contribute toward the leasing target. Therefore, the leasing target would not increase in their absence. They were delineated in an effort to prevent future bypass or shut down situations, which would cause additional public administrative costs under the emergency leasing program or disruptions to localities through layoffs.

Issue 2-10:

Site specific analysis was not completed or specific tracts were analyzed only in "Tract Profiles" which did not accompany the EIS.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Reed Zars, Powder River Basin Resource Council (Statement 43)

Bill Mackay, Jr., (NPRC) (Statement 45)

Response:

The Tract Profiles, which were incorporated by reference in to the DEIS (pages 6, 8, 13, and 51), provided Site Specific Analysis of the tracts. The DEIS provided cumulative analysis on the combinations of tracts under the alternatives. The DEIS indicated that Tract Profiles were available to the public since January 1, 1981, at the Miles City District Office and the Casper District Office of BLM.

Issue 2-11:

Factors such as water resources, air quality, socio-economics and tranportation were brought out in the scoping process. Why aren't the tract ranking factors the same as the concerns "scoped"?

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

The ranking process was rather detailed and did consider these factors as sub-ranking criteria. In other words these factors were reviewed in selection of the ranking facotrs. They were not included on Table 1-2 if they did not provide clear distinction between tracts.

Issue 2-12:

The EIS was prepared under an accelerated schedule, which is partly responsible for the inadequacy of the document.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

The DEIS was prepared under a time efficient schedule. The task was accomplished by analyzing issues that were potentially significant to the decision making task, and incorporating by reference other documents which explored less significant topics more thoroughly. We believe the document provides an adequate basis for the coal leasing decision.

Issue 2-13:

The No-Action Alternative would have impacts considerably greater than any of the other alterntatives in the EIS.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Mark Gordon, Wyoming Chapter Sierra Club (Letter 37)

Bill Mackay, Jr., NPRC (Statement 45)

Response:

This sentence was mis-stated and has been changed.

Issue 2-14:

The statement fails to mention that the feasibility studies have in many cases resulted in postponment of plans for power plants. The WyCoalGas project has been dropped.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

The fact that a particular project succeeds or fails has no real bearing on coal production goals. The short-fall projection continues to exist and new coal leasing will be necessary to meet demand. The WyCoalGas project has been shelved pending a more equitable financial situation.

Issue 2-15:

The EIS assumes all relevant laws will be followed. Presumably, one main purpose of the EIS is to assess the practicability of compliance.

Raised by:

John D. Wiener, Sierra Club (Letter 24)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

To provide a sound basis for analysis, it must be assumed that all relevant laws will be obeyed; however, the purpose of the EIS is to assess the possible results of compliance.

Issue 2-16:

How can something as important to the assessment of the leasing alternatives be assumed? This is in reference to the 60-40 basis for dividing population increases between Rosebud and Powder River Counties.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

The percentage distribution was adopted after consulting with the Powder River County Clerk's Office. It allows for a clear, concise assessment of one possible scenario which we feel is the most probable.

Issue 2-17:

Post-mining land use will be the same as pre-mining land use except for the lands used for housing or public facilities.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Assumption Number 12 has been amended to read: Postmining land use is expected to be the same as the premining use, except for the lands used for housing, public facilities, transportation rights-of-way and permanent changes due to development.

Issue 2-18:

The premise of comparing the marginal impacts of leasing to the baseline impact of changes that will occur with or without leasing is faulty.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Baseline, increment, and cumulative impacts are presented in the DEIS. However, a major purpose for the DEIS is to assess and compare the impacts of the alternatives; therefore, a comparison of marginal impacts remains valid.

Issue 2-19:

It is not valid to use one of the alternatives (No-Action Alternative) as a baseline.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

It is possible that the format of the DEIS has caused some confusion on this point. The future affected environment has been projected and presented as the No-Action Alternative. However, we believe that the procedure of comparing the affects of an action to the situation that would exist without that action is valid.

Issue 2-20:

The EIS overstates Montana coal production. Analysis prepared in conjunction with the ICCs EIS on the Tongue River Railroad indicates that the coal production in Montana will be lower.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

Since the demand analysis and the EIS cited above will not be published until the end of 1981 it is impossible to respond on that basis. The ICC will not make the referenced information available and therefore we are unable to varify the data reliability. A thorough research of on going possible/probable coal production was made in developing the No-Action Alternative.

Issue 2-21:

In light of the difference in quality between Tongue River and Decker/Sarpy/Colstrip coal it is not likely that coal development in the

Tongue River area will capture 65 percent of the new Montana sales.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

Coal contracts are normally the result of a negotiated effort with prices reflecting the quality of the coal. Therefore, if DOEs high production goal is valid there will be a market for the coal.

Issue 2-22:

Can the mines opening in the Tongue River area achieve a production level of 32.8 million tons in 1995?

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

A mine should reach full production capacity within 8 or 9 years leasing; however, it is market conditions and sales contracts that determine actual production levels.

Issue 2-23:

Erroneous impact analysis has resulted from an overstatement of coal production in the Tongue River area and an understatement of coal production in the Decker-Colstrip area.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

Production was projected based on available information on existing operations and other sources (ref. Montana Tract Profiles).

Issue 2-24:

The BLM DEIS does not account for induced employment in Forsyth and Miles City, nor is it sensitive to the location of indirect employment.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

The amount of induced employment in Forsyth or Miles City would not be measureable. Induced and indirect employment was distributed on the basis of the probable place of residence of the primary employment.

Issue 2-25:

The document is difficult to interpret because organization of tables and the Tract Profiles not being physically attached to the DEIS.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

The format of the document derives from the need to present a concise statement with a minimum of redundancy. The Tract Profiles were available to any interested party.

Issue 2-26:

The Peter Kiewit CX Mine is in Big Horn County, not Rosebud.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

This has been changed in the EIS.

Issue 2-27:

The Preferred Alternative as discussed in the DEIS, is not what the Regional Coal Team recommended. Why was Alternative 3 selected over Alternative 2?

Raised by:

Ed Herschler, Governor of Wyoming (Letter 27)

Jack L. Mahaffey (Shell Oil Company) (Letter 38)

Steve Elliot (Statement 46)

Bill Lowery (Statement 47)

Response:

Alternative 3C as recommended by the Regional Coal Team is the Preferred Alternative. The reason Alternative 3 was selected over Alternative 2 is that a section of state (Wyoming) coal could be developed in conjunction with the Kintz Creek tract, competitive leasing would be delayed until the Carter I-90 Exchange negotiations were completed and Alternative 3 keeps new competitive leasing south of Gillette.

The FEIS has been amended to show the RCTs recommendation at their October 2, 1981 Meeting.

Issue 2-28:

It appears that the preferred alternative is designed to meet the DOEs high production goal. Why is the DEIS written to suggest that leasing is meant to prevent a production shortfall?

Raised by:

Gary B. Glass, Geological Survey of Wyoming (Letter 28)

Response:

Due to the uncertainties regarding coal consumption over the next 10 years, especially for electric utilities and in light of the situation in the mid-east, a statement that the DOEs high production goal may not represent the 1990 market requirement for coal could be ill-conceived. If the market conditions materialize that justify the DOEs high produciton goal the preferred alternative would be preventing a production shortfall.

3

GEOLOGY

Issue 3-1:

There was inadequate discussion of coal resource geology in the EIS.

Raised by:

James E. Hawkins, Bureau of Mines (Letter 1)

Barbara Kennedy, Miles City, Montana (Letter 8)

James Paone, Bureau of Mines (Letter 16)

Response:

We believe that sufficient data was available for impact analysis and identification of alternatives. Before the EIS was started, the USGS developed tract delineation reports which included all relevant geology and mining methods based on those already in use in existing coal mines. The tract delineation reports became part of the individual tract profiles which are the site specific environmental analyses for the EIS. The tract profiles are readily available from the BLM Office in Casper and the listed references can be found in most geologic libraries.

Issue 3-2:

The statement "that a 5,500 foot cretaceous shale section overlies the Madison aquifer" is wrong.

Raised by:

James E Hawkins, Bureau of Mines (Letter 1)

Response:

The observation is correct and the necessary correction was made in the EIS.

Issue 3-3:

Conflicts between coal production and other mineral resources have not been discussed.

Raised by:

James Paone, Bureau of Mines (Letter 16)

Response:

The statements in paragraph three (Letter 6) indicates a lack of understanding concerning coal and other mineral resource conflicts. None of the minerals mentioned have been in conflict with coal. All of the bentonite mined lies well outside the coal fields on the basin edge. Except for pumice, little in the way of construction materials lie within the coal fields. The impact of coal on construction materials has been to increase the demand, most of which has to be brought in from other areas. We do not know where the information was found on silver and lead. As far as we know, none has ever been produced in the Powder River Basin, and the conflict potential is nonexistant.

Issue 3-4:

Modifications to the Timber Creek and Spring Draw tracts was suggested.

Raised by:

Mitchell F. Keamy, Hamphire Energy (Letter 12)

Joe M. Hamner, The Carter Mining Company (Letter 23)

R.E. Golkosky, Royal Land Company (Letter 36)

Response:

The Regional Coal Team (RCT) recommended in their October 2, 1981 meeting that lands in sections 31, 32, 33, T. 49 N., R. 70 W. be omitted from the Timber Creek tract. They also recommended that all lands selected for I-90 Exchange falling in the Spring Draw tract remain available for competitive leasing pending resolution of the Exchange. The decision on which lands would be exchanged to the Carter Mining Company of coal lands crossed by I-90 would probably be made in 1982.

4

Water Resources

Surface Water

Issue 4-1:

Given EPA regulations, how can you state that sewage effluent will increase 0.07 percent in the Tongue and North Platte Rivers by 1990?

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

The subject in the DEIS is municipal sewage effluent, and the calculated increases in dissolved solids in the rivers represent the impact of discharging the projected increase in sewage effluent into the rivers. We assumed that National Pollutant Discharge Elimination System (NPDES) permits for all unnatural polluting sources must be applied for and approved by appropriate state agencies.

Issue 4-2:

The increase in dissolved solids in Armells Creek is closer to one percent than four percent as stated in the DEIS.

Raised by:

William J. Robinson, Western Energy Company (Letter 18)

Response:

The projected 4 percent increase in dissolved solids in Armells Creek is the upper limit for base-flow conditions at maximum development; it is based on data which show that water in the Colstrip spoils contains concentrations of dissolved solids that are about double those in adjacent aquifers. Presumably, the spoils contribute a proportionate share of the base flow.

Issue 4-3:

Impacts to aquatic biology have not been adequately assessed.

Raised by:

W. Donald Dexter, Wyoming Game and Fish Department (Letter 20)

Response:

An amendment was added to the Surface Water Section of the Environmental Consequences Chapter.

Ground Water

Issue 4-4:

Why do units change from acre feet when discussing water to acres when discussing aquifers?

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

It is not customary to use a term like acre feet of aquifer destroyed because this would require detailed knowledge of the thickness of all the aquifers in the region. This information is not available because the aquifers in the Powder River Region are usually lenticular. Also, the water bearing characteristics of the aquifers vary greatly both vertically and horizontally thereby making a term like "acre feet of aquifer" meaningless.

Issue 4-5:

How many acres of aquifer would be removed by existing mines?

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

Shallow aquifers would be removed in an area of approximately 67,000 acres by existing mines. This figure has been added to the final EIS.

Issue 4-6:

The EIS should refer to number of wells destroyed or acres of aquifer removed by state or county.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

The number of wells affected and acres of aquifers disturbed is listed site-specifically in the Tract Profiles and cumulatively in the DEIS. The DEIS is regional and county or state segregation of these facts would serve no purpose in the analysis.

Issue 4-7:

Your comment that Broadus water supply is adequate presently is inaccurate.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

In a telephone conversation in June 1981, Lonnie Beach, Clerk of Broadus stated that the well capacity of 385 gpm was adequate for the current population of 900 but that a new well field 6 miles away would be necessary to secure additional water.

Issue 4-8:

What is the extent of the impact of mining on ground water?

Raised by:

John D. Smillie, Northern Plains Resources Council (Letter 35)

Response:

The reduction in dissolved solids concentration with increasing distance from a mine has been documented in certain areas (Riffenburg, 1925; Qayyum and Kemper 1962). The decrease in dissolved solids with increasing depth in the Powder River Basin is well established, and lends support to the contention that the dissolved concentration in water from spoil aquifers probably will also decrease. The actual change in water quality with distance from the mine is dependent on the quality of water in the spoil aquifer, the character of the natural sediments surrounding the mine, the water table gradients and the recharge rate. These factors are all site specific and would be collected and assessed during mine plan preparation and approval. Further studies of the movement of ground water in the vicinity of many existing mines in the Powder River Basin would be highly beneficial in predicting the impact on ground water of new mines. What data are available indicate that heavy minerals and dissolved solids concentrations in ground water decrease with distance from the spoil aquifer.

Issue 4-9:

The effects of poorer quality water and of having to drill deeper wells on agricultural productivity was not addressed.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Poorer quality water in spoil aquifers would probably reduce agricultural productivity in some site specific areas but normally this effect can be mitigated by drilling deeper wells-as stated:

The development of ground water from deeper zones would require additional expense for well construction, where cause and effect can be established. However, this expense would be born by the mine owner. Deep ground water development would also entail greater pumping costs in recharge areas where static water levels are lower than in shallow zones. This would not necessarily reduce agricultural productivity but could increase the cost of production and thereby reduce marginal agricultural activity. On the otherhand, if the water quality in the deep aquifers is better than it is in the shallow aquifers the better quality water possibly could increase agricultural productivity to an extent that would more than offset the increased pumping costs. The effects of deeper wells are site specific and will be analyzed once information is collected for the individual mine plan.

Issue 4-10:

The probability, frequency and location of reappearing springs after reclamation and their beneficial or harmful effects was not discussed.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

The probability, frequency and location of reappearing springs is site specific and requires an examination of the mine plan and the area in question. This will be accomplished during M&R plan development for each mine. As reclamation practices are relatively new, meaningful data on the reappearance of springs are not available. The beneficial or harmful effects of the reappearance of springs would depend on their location and the quality of the water. Again this is site specific and will be covered in the EIS for each individual mine.

Issue 4-11:

Data from real situations such as water quality degradation associated with the mine at Colstrip were not provided in the DEIS. The draft Department of State Lands EIS predicted similar problems in Area E and a comparison should be made in the Powder River EIS.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Ground water quality problems are local in nature and site specific. Further examination of the data on ground water in the vicinity of the Western Energy Company's Rosebud Mine (Area E extension near Colstrip) has led to a revision of the perceived impact of the mine on the water quality as stated in the Montana Department of State Lands (MDSL) DEIS. The final MDSL EIS states on page II-15 3a under Current Mining Impacts, "After reevaluating hydrologic information, some of which was gathered by Western Energy since the draft EIS was issued, Department of State Lands concludes that Cow Creek has not been affected by mining to the extent indicated in the draft. Nevertheless, seepage of water from mine spoil has degraded bedrock ground water and may have degraded alluvial ground water. At present detectable effects of mining on water quality in Area E are confined to the shallow alluvium within a mile or two of the existing mine and to bedrock aquifers within a few hundred feet of the mine."

Issue 4-12:

There is inadequate site-specific (water) information to evaluate the possibility of localized impacts.

Raised by:

Louis E. Allen, Wyoming State Engineers Office (Letter 31)

Response:

This information is included in the individual Tract Profiles available from the Casper BLM Office.

Issue 4-13:

The Yellowstone River Compact and the Wyoming Water Appropriation System was not discussed.

Raised by:

Louis E. Allen, Wyoming State Engineer's Office (Letter 31)

Response:

Administration of water and the appropriation system is the State of Wyoming's responsibility. The DEIS states that compliance of all state laws is assumed.

5

Air Quality

Issue 5-1:

It is vauge to report no specific affect of Alternatives 1, 2, 3, and 4 for none of the Alternatives in Air Quality.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

The site-specific air quality effects were analyzed and are reported in each Tract Profiles. This information plus, projected baseline conditions were analyzed cumulatively and reported by alternative in the EIS.

Issue 5-2:

How many tons of particulates by 1990?

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

As shown on Table 2-1, the total particulate production from the existing PRB, region coal mines would range from 69,300 tons for Alternative 1 to 94,900 tons for Alternative 4.

Issue 5-3:

Alternatives 2, 3, and 4 show 4,800 tons per year of total suspended particulates (TSP) being added at Colstrip. Air Quality Permit Number 1483 indicates 4,583 tons per year.

Raised by:

William J. Robinson, Western Energy Company (Letter 18)

Response:

The 5 percent difference in emmission estimates becomes relatively insignificant when compared to the errors in air quality modeling. It must be remembered that for leasing consistant emissions and modeling analyses from tract to tract is essential for comparison from tract to tract of the impacts. Specific needs and/or requirements for a specific mine will be addressed during the State's PSD review of the mine plan.

Issue 5-4:

The statement of 4,800 tons to be added by the tracts in Area D, Areas A & B, and Area C is completely out of the question. There should be no significant increases in TSP levels when the Area D operation is brought into light since at that time Area E will no longer be operated.

Raised by:

William J. Robinson, Western Energy Company (Letter 18)

Response:

In general the comment is correct. The text was changed in Alternatives 2, 3, and 4 to read: "about 4,800 tons per year would be added to the Colstrip area; however, this increase will be effectively offset by the completion of mining other locations within the area".

Issue 5-5:

Under the terms of Air Quality Permit No. 1483, Western Energy Company has committed to a mine-wide dust management plan which has made a significant reduction in the amount of particulate emitted at the Rosebud Mine. Data from the first two quarterly reports required as a condition of this permit suggests that the air shed in the Colstrip area is improving. It is Western Energy's contention that the Colstrip area was improperly designated a non-attainment area and has petitioned the Air Quality Bureau for a redesignation.

Raised by:

William J. Robinson, Western Energy Company (Letter 18)

Response:

The Montana Department of State Land indicated on October 15, 1981, that Colstrip is still non-attainment (NA) with respect to TSP. They also feel it is too early to determine whether or not a significant reduction in TSP emissions has been achieved in the NA area. However, the words "which is not expected to improve in the near future" were deleted from the text.

6

Soils, Vegetation, and Reclamation

Issue 6-1:

The DEIS does not address the problems concerning the disruption of habitats of high wildlife value where existing reclamation technology has not been proven. Ponderosa pine forest, rock outcrops, wetlands, and riparian habitats are habitat types of concern.

Raised by:

Robert M. Ballou, U.S. Fish and Wildlife Service (Letter 3)

W. Donald Dexter, Wyoming Game and Fish Department (Letter 20)

Response:

Our research has shown that the reclamation technology does exist for specific wildlife habitats. This is supported by Reclamation for Wildlife (The Wyoming Viewpoint, H.J. Harju) which was published in Adequate Reclamation of Mined Lands? (Symposium, Soil Conservation Soc. of Amer. and WRCC-21, Billings, Montana, March 26-27, 1980.)

Issue 6-2:

In the DEIS the Soils, Vegetation, and Reclamation sections are vauge.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

This comment is based only on information given in the summary which is meant to be short and concise.

Issue 6-3:

In the DEIS the reference (Packer, 1974) that is used to support the possibility of reclamation success is relatively old and out of date. This section would be more convincing if reference was made to a more recent publication or to ongoing studies.

Raised by:

W. Donald Dexter, Wyoming Game and Fish Department (Letter 20)

John D. Wiener, Sierra Club (Letter 24)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Nick Golder (Statement 57)

Response:

Two new publications which support and expand Packer's conclusions and the reclamation section of the DEIS are: Adequate Reclamation of Mined Lands? (Symposium, Soil Conservation Society of America and WRCC-21, Billings, Montana, March 26-27, 1980.) Draft Tongue River, Montana, Petition Evaluation Document, Montana Department of State Lands and OSM, September, 1981.

Issue 6-4:

There has been no reclamation bond released on any coal mines in the Powder River Basin in recognition of "successful reclamation".

Raised by:

John D. Wiener, Sierra Club (Letter 24)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Bill Mackay, Jr. (NPRC) (Statement 45)

Nick Golder (Statement 57)

Response:

It is true there have been no reclamation bonds released in the Powder River Basin, but it is because no mines have had the time to reach this point.

Issue 6-5:

In the DEIS there was no site-specific discussion or comparison between tracts of soil quality.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

There was no significant difference between soils on the tracts, therefore there was no need to compare them.

Issue 6-6:

The DEIS did not reflect that mined and or reclaimed land would require more intensive management than unmined land.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Our research has not revealed documentation supporting this statement.

7

Wildlife

Issue 7-1:

Disagree with the statement: "...wetlands,...would not be regionally affected or do not occur within the region."

Raised by:

Robert M. Ballou, U.S. Fish and Wildlife Service (Letter 3)

Response:

We agree that there are some major riparian zones adjacent to the area of analysis. Our statement that wetlands and other physical and biological resources would not be regionally affected was based on the following premise.

Wetlands and riparian resources would be affected by other actions in the region (e.g. Tongue River Railroad). However, new federal leasing alternatives would not contribute to those impacts. The only exception is the Spring Draw Tract where the Little Powder River riparian system would be affected by construction of a railroad spur. This site-specific effect has been analyzed and reported in the Tract Profile.

Table 4-3 as amended gives, the acres of riparian lands that would be affected.

Issue 7-2:

The statement that no threatened or endangered species are known to exist within the Montana area is incorrect.

Raised by:

Robert M. Ballou, U.S. Fish and Wildlife Service (Letter 3)

Response:

The statement has been changed to read: The bald eagle, peregrine falcon, and black-footed ferret may occur in the Montana portion of the study area.

Issue 7-3:

There is concern that meaningful information on wildlife habitat is not included.

Raised by:

Robert M. Ballou, U.S. Fish and Wildlife Service (Letter 3)

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

A more thorough discription of the major habitats found in the Powder River Basin may be found in the 1979 Eastern Powder River Basin Coal FEIS. Tiering of environmental assessment has been achieved for the Powder River Basin and is included in documents such as the Federal Coal Management Program FEIS, Northern Powder River Basin Coal FEIS, and the Eastern Powder River Basin Coal FEIS. To avoid duplication of material and ensure production of easily readable documents previous EISs are referenced and not repeated. Significant impacts germane to the proposed action have been discussed in this DEIS.

Issue 7-4:

Disagrees with the statement: "...13 percent...of golden eagles would move to new nesting sites."

Raised by:

Robert M. Ballou, U.S. Fish and Wildlife Service (Letter 3)

Response:

The statement on page 59 is not intended to infer that these birds would move to other natural nest sites. In a few cases there may be alternate nests within the territory of a particular pair. However, in most if not all cases, it will be necessary to construct nesting platforms away from active mining areas in order to provide replacement nesting sites. Initital experimentation with moving nest sites is promising.

Issue 7-5:

The environmental consequences section failed to mention fish.

Raised by:

W. Donald Dexter, Wyoming Game and Fish (Letter 20)

Response:

Fish were not mentioned because the only fishery of consequence in the Wyoming portion of the region that would be affected by proposed development is Caballo Reservoir. This reservoir would be destroyed by the development of fee coal even if the Duck Nest Creek tract is not leased and developed. Degradation of water quality due to mine run-off or pumping the mine pit should not occur if current OSM and DEQ regulations are enforced.

There are no significant fisheries on the tracts in Montana. Off-site impacts due to water quality degradation would be controlled by Department of State Lands and the Office of Surface Mining regulations.

Issue 7-6:

Will all disturbed areas be reclaimed to wildlife habitat?

Raised by:

W. Donald Dexter, Wyoming Game and Fish (Letter 20)

Response:

At a minimum, the 22,000 disturbed acres will be reclaimed to OSM and state standards. Currently most mining companies are using seed mixtures of native grasses with some shrub seeds added. In some cases in the region, containerized shrubs and trees are being planted in reclaimed areas.

Issue 7-7:

What is proposed to mitigate wildlife losses that are unavoidable?

Raised by:

W. Donald Dexter, Wyoming Game and Fish (Letter 20)

Response:

Unavoidable wildlife losses are considered to be those which would still occur after all attempts at mitigation are completed (e.g. using antelope type fencing). Therefore there is nothing that can be done to mitigate unavoidable wildlife losses.

Issue 7-8:

The DEIS should contain a more thorough discussion of mitigating measures for terrestrial wildlife.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

Impacts to wildlife on a site specific and cumulative basis were pointed out in the DEIS. The assumption made on page 13 of the DEIS assumes that all mitigation required by OSM and state regulation will be applied.

Issue 7-9:

Potential impact of increased human populations on wildlife was not discussed.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

The major impacts of increased human populations in the coal development areas would be increased road kills, higher poaching losses, and habitat loss from new subdivisions and other development. Based on a study by Vilkitis (1975) there is a low (5 percent) probability of even detecting a poaching violation. This makes prediction of poaching losses difficult (for one methodology see EPRB Coal FEIS 1979). Road kill losses are also difficult to project because there is no complete data source and because many road kills are not reported. In addition, road kills which are reported are not reported proportionally by species because antelope are smaller and cause far less damage during a collision than do heavier, taller mule deer.

8

Cultural Resources

Issue 8-1:

Calculation of land disturbance: Total disturbance of artifacts on all tracts vs. disturbance of mineable area within the tract was not made.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

Total acres potentially disturbed are listed several places within the DEIS and specifically in Table 2-1 and 4-3. The percentage of a lease tract that would be disturbed cannot be determined until a mine and reclamation plan is developed and approved. Therfore, in accordance with CEQ guidelines, the entire tract is assumed disturbed in order to present a 'worse case' analysis (see Table 2-1 and 4-3).

Issue 8-2:

Calculation of site density ratios based upon previous surveys of different levels of intensity-this adjustment wasn't addressed.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

Most of the surveys upon which these ratios are based were conducted at the Class III level (100 percent inventory of project areas). Much less fieldwork was conducted at the Class II level (100 percent inventory of 10 percent of project area). A Class I inventory is a files and document search of all existing data from Class II and III reports, as well as from other sources (historic, etc.). Therefore, the above density figures are significantly based upon the existing documented data base made up of numerous sources. However, the data base is in some cases incomplete and inadequate for cultural resource management purposes. This limitation is acknowledged. Specific information on cultural resources and inventories conducted may be found in the Tract Profiles.

Issue 8-3:

There is no attempt to determine the total number of significant sites that would be disturbed or eligibility determination by site that could be considered a resource loss.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

A significant resource loss would be the loss of cultural sites of *National Register* quality or eligibility. But because so often in the past, recommendations were to avoid sites without evaluating them for *National Register* eligibility, we don't know in quantifiable terms what the real resource loss would be. Any site located during the post-lease phase (i.e. Mining and Reclamation Plan Review) will be evaluated on a case by case basis and a determination of significance will be made at that time. If a site is significant appropriate mitigation will be prescribed in the M&R Plan.

Issue 8-4:

BLM states in the DEIS (page 59) that the SHPOs of Wyoming and Montana and the Advisory Council on Historic Preservation will determine significance.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

BLM agrees that it is the keeper of the *National Register* who actually determines significance, that is, eligibility to the *National Register* of Historic Places. This has been changed in the FEIS.

Issue 8-5:

"Buried sites will be lost."

Raised by:

Mark Junge, Wyoming Recreation Commission (Letter 29)

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

BLM is concerned with identifying and protecting *National Register* quality cultural resources on federal lands, and where federal actions occur. A *National Register* site need not be preserved if site data collection is complete. Its value or significance to history or prehistory will be known through documentation. In such cases a determination of "no adverse affect" may be made by BLM and the SHPO as per Section 106 of the National Historic Act of 1966.

Issue 8-6:

Section 106, not Section 6, mandates that "any site identified as potentially eligible for listing on the National Register would be protected."

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

While the goals of BLMs Cultural Resource Management Program are to identify and protect or mitigate significant (National Register eligible sites) on federal land, or on lands when federal actions occur, Section 106 (there is no Section 6) says only that the federal agency will take into consideration the effects of its actions on National Register eligible resources and afford the Advisory Council on Historic Preservation, established under Title II of the National Historic Preservation Act of 1966, the opportunity to comment on such actions. This change has been made in the FEIS.

Issue 8-7:

The following quote (page 2) is too vague. "Federal and state regulations protect these (cultural) resources. Historic and architectural resources on private lands may not be protected unless steps are taken by local governments and private citizens."

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

BLM acknowledges that several federal laws, such as the National Environmental Policy Act of 1969, the National Historic Preservation Act of 1966, and the Federal Land Policy and Management Act of 1976 address cultural resource protection, as referenced in the FEIS.

Part two of this issue is addressed as follows: Cultural resources occurring on private surface are the property of the landowner. BLM can mitigate adverse effects on the cultural resource caused by a particular federal action. BLM cannot however, afford protection for the same cultural resource if a nonfederal action would cause an adverse effect.

9

Visual Resources

Issue 9-1:

The DEIS implies that mines are to be managed as visual resources.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

The BLM does not manage mines as visual resource and the DEIS does not make this statement. It does state that the most intrusive mines (along high-use roadways, recreation areas, and near population centers) also provide a source for interpreting mining procedures, geological formation, and reclamation procedures. These factors relate to the "visual sensitivity" of an area used in BLM Visual Resource Management.

Issue 9-2:

The DEIS states that no irreversible or irretrievable committments of visual resources were identified.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

With the mitigation or restoration of contours and reseeding, we believe that mined areas and support facilities can today be reclaimed to successfully meet the visual quality of the premining environment.

10

Land Use

Issue 10-1:

The assessment of impacts to agriculture, regionally and on a site-specific basis, is totally inadequate.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Impacts to agricultural production on a county basis from the preferred alternative would reduce production by two percent or less. If this agricultural loss was computed on a regional basis, it would be far less than one percent. We realize the effects on individual ranch or farm operations and this problem was discussed in the Tract Profiles.

It must be pointed out that not all the land proposed to be mined would be removed from production at one time. Areas not undergoing mining operations or rehabilitated after mining would be available for agricultural production.

Impacts of associated facilities (those directly associated with surface coal mines) were assessed site-specifically and cumulatively. The Tongue River Railroad was not assessed because it is related to actions other than the proposed action for this EIS and will be analyzed as a separate action by the Interstate Commerce Commission (see response to similar comment in Transportation section). Mine-mouth utilization has not been proposed for the coal tracts under assessment with exception of the Colstrip maintenance tracts. These tracts would not result in a new mine and the present mine and power generation plant have been subjected to several levels of environmental assessment.

Disruption of parts or all of 44 ranch units has been recognized in site-specific analysis (tract profiles) and cumulatively in the EIS. The individual ranch operators (if qualified surface owners) are protected by the provision that they have total denial to mining through consent to mining procedures as specified by the Surface Mining and Reclamation Control Act. They can decide individually and independently whether or not to sell their property to a mining company. Compensation to landowners wishing to sell to mining companies has been adequate based on cases examined to date (Ref. Appendix G).

Impacts from mines adjacent to agricultural operations (off-site impacts) have been assessed and summarized in Table 2-1. Numbers of wells that would be affected and acres of aquifers removed are listed. Montana law requires mining companies to monitor groundwater and wells adjacent to their operation. Wells made unuseable by mine operations must be replaced by the mining company (section 22(3), Title 50, Chapter 10, R.C.M. Montana 1947). Similar laws exist in Wyoming to protect groundwater and shallow wells.

Issue 10-2:

Productivity of agricultural land is not estimated in the EIS.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Site specific analysis as shown in the Tract Profiles gives a detailed breakdown of acres of croplands and estimated production of hay, grain, and livestock forage. Table G-2 in the DEIS provides production of barley, corn, oats, all wheat, all hay and cattle in Powder River and Rosebud Counties of Montana, the State of Montana and the U.S.A.

Issue 10-3:

Table 4-3 in the DEIS is confusing.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

We agree and the totals for Alternative 1 have been removed from the action alternative totals to clarify the table in the final EIS.

Issue 10-4:

The statement that "underground utilities, pipelines, and overhead powerlines would modify agricultural land use but not remove acres from production" is not accurate.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

We agree and have changed the statement to read "would not remove significant amounts of acreage from production".

11

Recreation

Issue 11-1:

The recreation section should point out the land access problems, the increasing recreation demand and impacts on the edges or outside the region.

Raised by:

W. Donald Dexter, Wyoming Game and Fish (Letter 20)

Richard C. Moore, Industrial Siting Administration (Wyoming) (Letter 32)

Response:

The first paragraph on page 39, DEIS, mentions the problem of access. The effect of increased recreational use is discussed in Chapter 4 and would be felt in those areas described in Chapter 3.

The effects of coal leasing as related to recreation demand are discussed in Chapter 4. Based on information gathered during the inventory stage (Montana State Comprehensive Outdoor Recreation Plan, Wyoming State Comprehensive Outdoor Recreation Plan, and existing use statistics in federal, state, and local areas) the present facilities are adequate for present use (as stated in Chapter 3).

Regional impacts would increase and then level off as the tax base increased. Facilities would be provided from these additional revenues (i.e. the recent developments in Gillette, Wyoming).

Issue 11-2:

The statement that new federal leasing would not appreciably affect dispersed recreation is questionable (depending on the scope considered--national vs. local).

Raised by:

W. Donald Dexter, Wyoming Game and Fish Department (Letter 20)

Response:

Estimated population increase in a seven county area of the Powder River Region from new coal leasing would be 4,190 people. This is two percent of the total population projected to live in the same area in 1990. We believe that this number is insignificant in comparison to the total recreation demand.

Issue 11-3:

Fishing demand in Wyoming was not addressed.

Raised by:

W. Donald Dexter, Wyoming Game and Fish Department (Letter 20)

Response:

All recreation activities were inventoried for capacity and present use. When future projections (population vs. use) were examined it was found that all activities would experience increases, some more than others. The effects of use on water-based recreation was addressed and found that the existing facilities are adequate.

12

Transportation

Issue 12-1:

The proposed Tongue River Railroad would have an additional affect on train traffic on the Burlington Northern lines leaving the region.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

The Tongue River Railroad would add traffic to the Burlington Northern line and this is discussed. The numbers are shown in Figure F-3. The statement in Chapter 2 refers to the fact that the Chicago-Northwestern line would carry coal trains to the Union Pacific line thus reducing trains and impacts on the Burlington Northern line. The Tongue River Railroad would act as a spur to the Burlington Northern line.

Issue 12-2:

The Tongue River Railroad was either not mentioned or mentioned in the No-Action alternative in error.

Raised by:

John D. Smillie, Northern Plain Resource Council (Letter 35)

Bill Mackay, Jr., (NPRC) (Statement 45)

Mary Daniels (Statement 55)

Response:

The Tongue River Railroad is mentioned in the "Affected Environment Section" and not as an existing situation. The affected environment is what we anticipate will be present in the region by 1990. The Montco-Nance coal mine is in process of being permitted. Because the Montco mine plan calls for nine million tons of coal production by 1990, the Tongue River Railroad was included as the "proposed" link to the Burlington Northern rail line. Impacts and routing of the Tongue River Railroad will be assessed in an EIS to be prepared by the Interstate Commerce Commission.

Issue 12-3:

It appears that an assumption was made that all rail traffic flows east on the Burlington Northern rail line through Miles City.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

This is not entirely true. It was assumed that the primary markets for the coal were to the east and the predominant flow of coal would be easterly. For this reason the rail traffic is projected at a higher level going east. There was some allowance for westward traffic although it was a very few trains per day.

Issue 12-4:

If coal leased in the Nichols spur area is to be used for mine maintenance the trains per day from Nichols spur would not vary among Alternatives 1, 2, 3, or 4.

Raised by:

Carole Dawkins, Interstate Commerce Commission (Letter 39)

Response:

Your comment is correct. Train per day rates should be the same for all alternatives. The correction was made in the FEIS.

Issue 12-5:

The fiscal impacts of road improvement should be quantified and included in projections for county budget and state expenditures.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

We do not have the ability to analyze the costs of these impacts. Sources with the Montana and Wyoming Highway Departments state that increased costs and budget cuts were making it difficult for them to keep up with needed maintenance. They also said it was virtually impossible to calculate traffic volumes and related maintenance costs for specific routes for 1990 and beyond. For this reason impact as related to the alternative leasing levels were pointed out in the DEIS with no discussion of costs.

Issue 12-6:

Current rail traffic was not given.

Raised by:

William P. King, Wyoming State Highway Department (Letter 30)

Response:

This information was presented in Table 3-4 and Figure F-3 in the DEIS.

Issue 12-7:

Mitigating measures for "at-grade" crossings were not proposed.

Raised by:

William P. King, Wyoming State Highway Department (Letter 30)

Response:

Specific mitigating measures are more appropriately placed in the mine plans and assessments of individual operations, in which more specific information on the distribution and timing of effects will be available.

13

Noise

Issue 13-1:

Are you stating that Broadus is within the 55 dBA noise zone of railroad traffic?

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

We agree that the comment on the 55 dBA noise zone is confusing and we have clarified it in the EIS. The impact in Broadus and other communities not along rail lines would be from increased traffic on state highways, city streets, and county roads. The 55 dBA zones for most routes would fall between 500 and 1,000 feet from the road centerline.

Issue 13-2:

The costs of noise pollution (reduced weight gain in cattle, etc.) are not but should be included in the EIS.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

We do not believe that costs of noise pollution as related to the proposed action is a significant impact on the region. Additionally we know of not evidence that noise levels from this type of mining or transportation would impact cattle causing weight loss.

14

Sociology

Issue 14-1:

Because the City of Gillette plans to pursue a more lenient annexation policy, population projections should be adjusted upward.

Raised by:

Michael B. Enzi, Mayor of Gillette (Letter 6)

Response:

It is quite possible that a more lenient annexation policy could increase the city's share of the county's population. On the other hand there has been a pronounced downward trend in that ratio in the last three census counts (1960, 1970, and 1980), dropping from 61.08 through 55.52 to 49.79. It is felt that the 1980 ratio will serve as a better indicator than some other unknown.

Issue 14-2:

Alternative 1, No-Action, is shown to affect Rosebud and Powder River Counties. Is Sheridan unaffected under this alternative?

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

Alternative 1 is shown to affect Rosebud and Big Horn Counties. By comparing the 1979 data for Sheridan (Table 3-8) to the projected baseline data in Tables 4-10, 4-11, and 4-12 it can be seen that Sheridan will be affected by developments under the No-Action Alternative.

Issue 14-3:

Under the No-Action Alternative please state which mines create this level of impact by year.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

Since there is a projected trend upward in the region, 5 year "benchmark" increments were used. Any additional analysis under the No-Action would be superfluous, because there would be no new federal action as it relates to the leasing alternative.

Issue 14-4:

Under the No-Action do you still assume 40 percent of the socio-economic impacts to be in Powder River County?

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

Careful comparison of the data provided in Tables 3-7, 4-10, 4-11 and 4-12 will indicate that impacts to Powder River County are considered non-existent under the baseline.

Issue 14-5:

What is the number of houses in Ashland in 1981? Is it less than 50?

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

Table 3-6 of the DEIS indicates that in 1980, the year used as a benchmark for Montana counties, there were 248 housing units in the Ashland District.

Issue 14-6:

Upon what population increase do you base the need for 1,813 additional housing units in Rosebud County under the No-Action Alternative? If Ashland increases by 540 people, assuming one person per added house, where are the other 1,273 units forecast to be needed?

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

Tables 3-7 and 4-11 indicate a projected population increase of 4,735 under the baseline alternative between 1980 and 1990 for Rosebud County. The same tables indicate a projected population increase of only 231 for the Ashland District during the same time frame. It can be seen that the changes to the Ashland District represent only a small part of the changes to the overall county under the No-Action Alternative.

Issue 14-7:

The DEIS has overstated regional socio-economic impacts due to overestimating coal production in the baseline and understated the longer term impacts to the region and the nation which could result from likely shortages in the coal supply.

Raised by:

Philip L. White, Texas Energy Services, Inc. (Letter 13)

Response:

Answers to this issue may be found in previous responses.

Issue 14-8:

Population increases are not expected for southeastern Montana without new Federal Coal Leasing.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Please see response 15-7 (paragraph 3) which points out that even without new federal leasing population will increase in Rosebud and Big Horn Counties due to developing coal mines.

Issue 14-9:

Mitigation of social effects is not adequately addressed in the DEIS.

Raised by:

Michael Enzi, Mayor, City of Gillette (Letter 6)

Barbara Kennedy, Miles City, Montana (Letter 8)

Margaret Ottoy, Assistant Planner, Miles City, Montana (Letter 10)

Richard C. Moore, Industrial Siting Administration (Wyoming) (Letter 32)

Response:

There are no "special" mitigation measures for social effects in the EIS. Impacts were based on a "worse case" basis. And, if measures are developed after leasing, the identified impacts would be reduced.

Issue 14-10:

The DEIS contains an error in its description of Ashland's school situation.

Raised by:

William J. Robinson, Western Energy Company (Letter 18)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

The text under Community Services and Facilities, Chapter 3 (Page 41, second paragraph) has been changed to: Ashland (Rosebud County) does not currently have a public high school for non-Native Americans. Students from the area attend public schools in Colstrip and Broadus.

Issue 14-11:

The DEIS does not adequately address potential problems associated with rapid population growth.

Raised by:

John Wiener, Sierra Club (Letter 24)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

The text under social organization, Chapter 4 (page 62) has been changed with the addition of the following: Rapid population growth in the Ashland area and the Broadus area would result in visible stresses such as personal property crime, family instability, (divorce, spouse abuse, child abuse and neglect), alcohol and drug abuse, interpersonal conflict, and similar behaviors.

While it is uncertain as to whether the rate would markedly change, the increased population levels would virtually insure that the stress incidents would increase. These stresses of adaptation, affecting both long-time residents and newcomers, would be most evident and intense during the initial construction phase of the mine development under Alternative 4. However, at least until construction is completed and stability is re-established, they would also exist in the Ashland and Broadus areas under Alternative 2 and 3 development.

Issue 14-12:

Regional attitudes toward coal development are not as favorable as the EIS portrays.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Nick Golder (Statement 57)

Response:

The text under Attitudes, Chapter 3 (Page 41) has been changed to: Overall, people who were interviewed within the region favored coal development. There was a higher level of unqualified support for coal development in Wyoming than in Montana. Some respondents stated they would be in favor only if it was certain the coal was needed to help meet the nation's energy requirements. (The remainder of the discussion is accurate.)

Issue 14-13:

Table 4-8 in the DEIS describes only personnel needs and it is inconsistent with the Powder River Comprehensive Plan.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Lonnie Beach, Town of Broadus (Statement 53)

Response:

Table 4-8 provides general indicators of the magnitude of personnel-facility requirements under the various alternatives. That table has been revised to state that the projections are based on continuation of current levels of service.

Issue 14-14:

Housing quantity effects are addressed in the DEIS but not housing quality-costs.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Table 4-9 in the DEIS displays housing requirements for cities and counties in the impact area. It was designed to provide a general indication of the magnitude of housing needs associated with the various alternatives. This level of analysis does not permit valid projections of housing costs and quality.

Issue 14-15:

The DEIS lacks detailed social and economic effects information.

Raised by:

Margaret Ottoy, Assistant Planner, Miles City, Montana (Letter 10)

Response:

These remarks call for a level of specificity that is inappropriate for a regional document. The EIS is not designed for detailed, location-specific planning.

Issue 14-16:

The purpose of the description of potential relations between Native Americans and newcomers in the Ashland area is unclear.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

The purpose of the description is to point out a potential social impact. Representatives of the BLM EIS team met with Northern Cheyenne tribal officials. These officials expressed concern over potential Native American newcomer conflicts in the Ashland area.

Issue 14-17:

The numbers in Table 2-1 (Sociology) do not match the text and are of unknown origin.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

The figures in Table 2-1 (Sociology), developed by taking the existing ratio of residents to service personnel and facilities and applying this ratio to projected future populations, appears to be consistent with the text (pages 15-21 in the DEIS).

15

Economics

Issue 15-1:

How were the deficit balances arrived at in the fiscal analysis? What assumptions were made?

Raised by:

Michael B. Enzi, Mayor of Gillette (Letter 6)

Response:

The preliminary purpose of the analysis is to provide a comparison of the relative magnitudes of deficits (or surpluses), and to point out localities where potential costs would exceed potential benefits or vice versa. The assumptions and methods are explained in the footnotes on Tables 2-3 and 4-12.

Issue 15-2:

State public sector coal revenues and expenditures related to revenue distributions as per statute; for example, severance taxes.

Raised by:

Margaret Ottoy, Assistant Planner, Miles City, Montana (Letter 10)

Reponse:

The DEIS provides a clear, concise comparison among the alternatives of potential benefits and potential costs for localities. A presentation of revenue distribution among Montana's accounting funds would be pointless in terms of providing the decision maker with comparisons of relative, potential, local benefits because Montana's local governments do not receive a direct apportionment of coal revenues.

Issue 15-3:

Compare agricultural employment and predicted coal industry employment.

Raised by:

Margaret Ottoy, Assistant Planner, Miles City, Montana (Letter 10)

Response:

Table 4-10 of the DEIS provides a comparison of predicted coal employment to all other employment and in this manner provides a relative measure of the increasing importance of coal employment to the region. However, it is not felt that an additional breakdown of employment would aid in the decision making process.

Issue 15-4:

Revenues from agricultural land should be compared with revenues from coal acreage since taxable valuations are of importance to regional economics.

Raised by:

Margaret Ottoy, Assistant Planner, Miles City, Montana (Letter 10)

Response:

Table G-1 has now been changed to reflect the potential loss of agricultural sales per acre compared to the potential gain per acre to the agricultural land owner from coal royalties. The relative value of coal acreage to agricultural acreage can be inferred from the information provided.

Issue 15-5:

The DEIS is inadequate in treatment of: income, relative importance of industrial sectors, purchase of labor as a percent of the economy, local per capita revenues and expenditures by industrial share, distribution of Federal mineral royalties, employment and employment breakdown, inflation, workforce participation rates, and population forecasts, and other adverse impacts.

Raised by:

Margaret Ottoy, Assistant Planner, Miles City, Montanas (Letter 10)

Richard Jones, Miles City, Montana (Letter 11)

Richard Cauble, National Wildlife Federation (Letter 26)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

The DEIS provides existing levels of employment, population, and budgets. Projections of employment, population, and fiscal balance for the year 1990 are also provided for the No-Action Alternative (which is the baseline) and for the other alternatives.

Issue 15-6:

It is false to assume that the development of coal would commit the southeastern Montana region to a single economic base.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

This statement has been changed.

Issue 15-7:

Under "Land Use," the DEIS states: "Land use patterns are expected to shift from agricultural toward mining and urbanization without new Federal coal leasing and implementation of the preferred alternative would change this very little."

"The DEIS does not state which way this would change."

"The conclusion, in any case, contradicts the finding that 44 more ranches would be impacted under the preferred alternative."

"It also ignores all off-site impacts, including the impacts to ranches along Tongue River and Otter Creek which would result from the construction of the Tongue River Railroad, due to adoption of the preferred alternative."

"Further, it ignores the fact that without Federal Leasing, land use patterns would not shift to industrial uses in southeastern Montana, since no new mines would open without Federal Leasing."

Raised by:

Mr. and Mrs. Herb Mobley, Tongue River Agricultural Protective Association (Letter 25)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Table 4-3 and the discussion on land use on page 60 of the DEIS point out that a total of 221,400 acres (both on-site and off-site) in the region will be disturbed by industrialization under Alternative 1. Under the Preferred Alternative, an additional 65,000 acres would be disturbed by both on-site impacts and off-site impacts. Land use patterns on approximately one percent of the region would shift towards industrialization. This includes both on-site and off-site disturbance.

Impacts of the Tongue River Railroad are included under Alternative 1, as the railroad may be built with or without additional Federal Leasing.

This may be true of Powder River County; however, the Spring Creek, Consol CX, and Peter Kewitt CX mines will all become reality in Big Horn County, and the Montco-Nance and Greenleaf-Miller mines will become operational in Rosebud County, In addition, there will be increased power plant capacity in Rosebud County as well as increased oil and gas activity in both Rosebud and Big Horn Counties.

Issue 15-8:

Economics-The DEIS discusses only 1990 budget levels. The years between 1985 and 1990-when impacts are at their peak, but income from the mines (still under construction) will be at a minimum--is much more critical in terms of local budgets than 1990.

Raised by:

Mr. and Mrs. Herb Mobley, Tongue River Agricultural Protection Association (Letter 25)

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

This is true; however, in Montana local budgets will be highly dependent on the lobbying efforts of local governmental entities in all years since Montana statutes do not provide a mechanism to assure local governments of a percentage of coal revenues. The year 1990 does represent the expected peak in demand on services and facilities that may be induced by population increases resulting from Alternatives 2, 3, or 4. Admittedly, the outlay for capital construction may occur prior to this peak demand; however, the burden of debt servicing will occur afterwards. It is for this reason that every effort was made to include debt servicing in the basis for projecting public expenditures.

Issues 15-9:

The DEIS assumes budgets without new leasing, although the No-Action Alternative assumes increases in coal production of roughly 200 percent over current production. Obviously, some communities will be greatly impacted.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

The assumption that the budget would be balanced is misleading. The assumption has been changed to state that revenues would equal expenditures through taxation, user fees, grants or debt (Ref. Table 4-12).

Issue 15-10:

The greatest problem with the economic fiscal analysis is that the tables provided do not have the existing baselines and the Alternative 1 baseline together for comparison. This makes the comparison of leasing impacts misleading, and understates the overall impact of mining.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Impacts from new leasing are measured from the No-Action Alternative baseline not the existing baseline (Chapter 3).

Issue 15-11:

On page 21 is found the only reference in the DEIS to the impacts of leasing on agricultural economics. "Impacts to agricultural economics are considered insignificant" under Alternatives 2, 3, and 4, according to the DEIS; the DEIS then cites Appendix G, and refers to the tract profiles for the methodology used. This information (methodology) should be in the DEIS itself, at least in an Appendix; NPRC has been unable to get a single answer as to how the figures in Appendix G were arrived at. It is clear that different methodologies were used, and possibly different data, between the calculations in the Tract Profiles and those in Table G.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Tables G-1 and G-2 in Appendix G contain the logic and methodology used in arriving at the conclusion that impacts to agricultural economics are considered insignificant for the Montana section of the Powder River Region. Impacts to Wyoming agriculture were analyzed in the Tract Profiles for Wyoming tracts. The statement on page 21 (DEIS) is being changed to reflect this information. Table G-1 is also being changed to provide a better analysis of impacts to the agricultural landowner.

Issue 15-12:

The discussion (on agricultural impacts) is misleading, in any case, since the analysis only considers impacts to agriculture on the mine sites. Furthermore, the DEIS elsewhere states that the Preferred Alternative will remove 293,500 acres from production and cause a total change in the economic base of the region from agriculture to coal. How BLM can, nonetheless, conclude that "impacts to agricultural economics are considered insignificant" is past understanding.

Raised by

John D. Smillie, Northern Plains Resouce Council (Letter 35)

Response:

Table 4-3 on page 70 of the DEIS points out that under Alternative 4 (the maximum leasing alternative) 293,500 total acres would be disturbed, including 210,000 acres in the baseline which will be disturbed even without additional leasing. 55,100 acres of rangeland and 9,100 acres of agricultural land would be disturbed under Alternative 3. The discussion on land use on page 60 (DEIS) points out that an additional 800 acres would be disturbed for off-site impacts under Alternative 3. The discussion further points out that, in terms of total crop acreage disturbed under Alternative 3, only two-tenths of one percent would be disturbed in Big Horn County, and only 1 percent would be disturbed in Rosebud and Powder River Counties. See Table G-2 for the relative significance of 1979 crop production and cattle inventory in these counties to Montana and the U.S. It should be noted that the statement on the shift in economic base has been revised.

Issue 15-13:

The analysis of fiscal impacts in Table 2-3 leaves out impacts to Ashland because it is an unincorporated community without formal budgets. It would seem logical to project expenses and revenue on a per capita basis, as was done with the incorporated communities. This would at least provide some analysis of likely fiscal impacts to Ashland, which could experience the greatest impact of any locality under the Preferred Alternative. To ignore these impacts, as the DEIS does, because of the inconvenience involved in measurement is inadequate and innaccurate.

Raised by:

John D. Smillie, Northern Plains Resource Council (Letter 35)

Response:

Because Ashland is unincorporated there was no existing budget on which to base a per capita projection. Relative population increases for the Ashland District are pointed out. Because all of the population increases to Rosebud County under Alternatives 2, 3, or 4 will occur in the Ashland District it can be validly asusmed that the expenditures resulting under these alternatives to Rosebud County and Rosebud County schools will be related to the Ashland District.

Issue 15-14:

There will be some overwhelming impacts to Powder River County, resulting from Federal Coal Leasing actions, which may be overlooked by the reader due to the inclusion of the word "only" in the phrase "only 40 percent of any population increase..." on page 63.

Raised by:

Lonnie Beach, Town Clerk, Broadus, Montana (Statement 53)

Response:

Agreed. The word has been deleted.

Issue 15-15:

The fiscal analysis in the DEIS doesn't properly address the potential time lags between the incidence of socio-economic needs and possible remedies.

Raised by:

Lonnie Beach, Town Clerk, Broadus, Montana (Statement 53)

Response:

We believe that the socio-economic analysis in the DEIS has provided clear, concise comparisons of the employment, population, and potential fiscal changes that could result from the alternatives and has provided a measurement of the severity of potential impacts to local communities. The fact that the DEIS only defines one probable scenario must be acknowledged; however, the possible variations of revenue lags and required lead times would be infinite and analysis of all possible cases would fill volumes. In addition, due consideration of the role of local authorities, in their lobbying efforts to reduce revenue lags and lead time requirements, indicates that the problem may not be insurmountable.

Issue 15-16:

The fiscal analysis for Montana's localities appears to be based on Wyoming's tax laws, and the differences in tax laws between Montana and Wyoming should be addressed.

Raised by:

Lonnie Beach, Town Clerk, Broadus, Montana (Statement 53)

Response:

By presenting the fiscal analysis in the manner presented, the DEIS achieves the purpose of comparing potential benefits to potential costs. This is pointed out on page 63 (DEIS) and cannot be overemphasized. The fact that Montana statutes do not directly apportion coal revenues to local communities could evoke the temptation to explore only the costs to local communities. However, this would be highly misleading as the potential for public revenues from coal production is significant, especially in view of the 30 percent severance tax levied by the State of Montana.

It would not be productive to address the differences between Wyoming's tax laws and Montana's tax laws, and the fiscal analysis for Montana's localities is not based on Wyoming's tax laws. But the analysis is presented in a manner that ties the potential costs of coal production to the potential benefits.

Issue 15-17:

Fiscal surpluses will not occur in Montana, and the DEIS should acknowledge the existence of the joint Rosebud-Powder River School District at Ashland.

Raised by:

Lonnie Beach, Town Clerk, Broadus, Montana (State 53)

Walter Archer, Powder River Protective Association (Statement 54)

Response:

The fiscal analysis, as presented in the DEIS, achieves the purpose of comparing potential costs to potential benefits. A fiscal deficit or a fiscal surplus should be viewed only from the perspective that the potential exists for the costs to a locality to exceed the benefits, or vice versa, the benefits to a locality may exceed the costs. With this in mind the magnitude of a surplus or a deficit becomes irrelevant, and the importance of a analysis shifts to the question of whether benefits of the alternative will cover the costs of the alternative or not. A paragraph has been added under the Economics heading in Chapter 2 to point this out.

In addition, although it is good that a mechanism such as the joint Rosebud-Powder River School District exists to alleviate impacts to the school system at Ashland, the analysis should still only serve to point out the localities where potential costs could exceed potential benefits.

Issue 15-18:

Table G-1 implicitly assumes a multiplier of 2.58 times loss in agricultural sales to achieve loss to gross regional production. What justification is offered for this assumption.

Raised by:

Richard W. Jones, Miles City, Montana (Letter 11)

Response:

The multiplier in question (2.58) was originated by the Regional Economic Analysis Division of The Bureau of Economic Analysis, U.S. Department of Commerce. It was published by the Water Resource Council in the Regional Industrial Multiplier System in January, 1977. It should be noted that the information in Table G-1 has been replaced in order to provide a more in-depth analysis of the impacts to the agricultural landowner.

Issue 15-19:

On page 5 and 6 of the letter referenced below there exists much confusion regarding employment under Sub-Alternatives 2A, B, and C.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

The employment data presented under the analysis of the sub-alternatives is entirely in error. This has been changed under Alternative 2 or 3. In a worst case scenario, coal employment will reach 3,985 in Montana and 13,300 in Wyoming.

Page 41 of the DEIS provides the level of coal employment as it existed in the 3 counties in 1980. Table 4-10 provides the baseline coal employment projected for those counties in 1990 as well as coal employment projected under the alternatives.

Issue 15-20:

The DEIS does not account for the impacts of mines that may open in the area without Federal Leases.

Raised by:

Walter Archer, Powder River Protective Association (Statement 54)

Response:

All proposed or potential mines, that were considered legitimate possibilities, were included in the baseline. Therefore, the population changes induced by these mines are reflected in the baseline expenditure levels.

Issue 15-21:

How many new jobs are forecast in the Montana sectors other than mining?

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

By comparing the data on page 41 (DEIS) and in Tables 3-7 and 4-10 it is readily apparent that 2,426 new jobs are projected in the baseline for 1990 outside of coal employment.

Issue 15-22:

Clarify how the employment figure of 9,100 was arrived at.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

The statement under Alternative 4 has been changed to read 4,675 for Montana and 14,300 for Wyoming (Ref. Table 4-10). The data on the housing was derived in Table 4-9).

Issue 15-23:

Since you do not report coal employment for Alternative 1, employment projections under the other Alternatives are not easy to accept.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

Coal employment is projected for Alternative 1 in Table 4-10; however, the data is now included in the introduction to Alternative 1 in Chapter 2.

Issue 15-24:

Table 2-1, Economics: Please give sources and calculations; why is Broadus population excluded.

Raised by:

Barbara Kennedy, Miles City, Montana (Letter 8)

Response:

Table 2-1 is merely a summary of the more significant changes pointed out in the rest of the DEIS. Because revenue/expenditure projections were not made for Ashland it was necessary to provide population projections.

16

Other Issues

Issue 16-1:

It is difficult to determine the actual area covered and regional boundary on the map of regional activities.

Raised by:

W. Donald Dexter, Wyoming Game and Fish Department (Letter 20)

Response:

The map shows the overall area of concern in Montana and Wyoming with the boundary of the map being the general boundary of the region. Regional boundaries do vary for each resource discussed in the DEIS. Geology is essentially site specific or at least limited to the high to moderate areas of the coal seams. Recreation is discussed for the entire region; soils, vegetation and reclamation is essentially the region of the existing and proposed mines; wildlife covers the herd units and areas affected by existing and proposed mines plus major access facilities. Water resources considers site specific uses and effects as well as the region as a whole. Waters such as Alcova, Glendo, Keyhole, etc. were not discussed because no potential impacts to these waters were identified. Air quality was analyzed site specifically and cumulatively for the region. Other resource discussions follow the same trend with discussions focusing on that portion of the region believed to be significantly affected.

Issue 16-2:

The regional maps contains errors on some of the tracts near Colstrip.

Raised by:

Patty Kluver (Letter 42)

Response:

The Colstrip D tract is mapped properly in the Tract Profile but improperly on the regional map. This fact has been witnessed on the map erratta sheet in the FEIS.

MAP ERRATTA

1. None of the Colstrip D tract falls within section 18 of Township 2 North, Range 42 East, in Montana.

2. The North Antelope Mine should appear as a nonproducing mine adjacent to the North Antelope Preference Right Lease Application group in Township 41 North, Range 70 West, in Wyoming.

3. The Crow/Shell Mine should be located in Townships 8 and 9 South, Range 37 and 38 East, in Montana.

4. The North Decker tract (in Montana) should be amended by omitting the following land:

   Township 8 South, Range 40 East
   - Section 21: SE 1/4 SE 1/4
   - Section 26: SW 1/4 NE 1/4, W 1/2 SE 1/4, S 1/2 NW 1/4, SW 1/4
   - Section 27: All
   - Section 28: E 1/2, E 1/2 NW 1/4
   - Section 34: NE 1/4 NE 1/4
   - Section 35: N 1/2 NW 1/4

5. A black triangle should be added to the map to depict the Gas Draw Oil Field.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1981—576-053/25 Region No. 8

Form 1279—3
(June 1984)

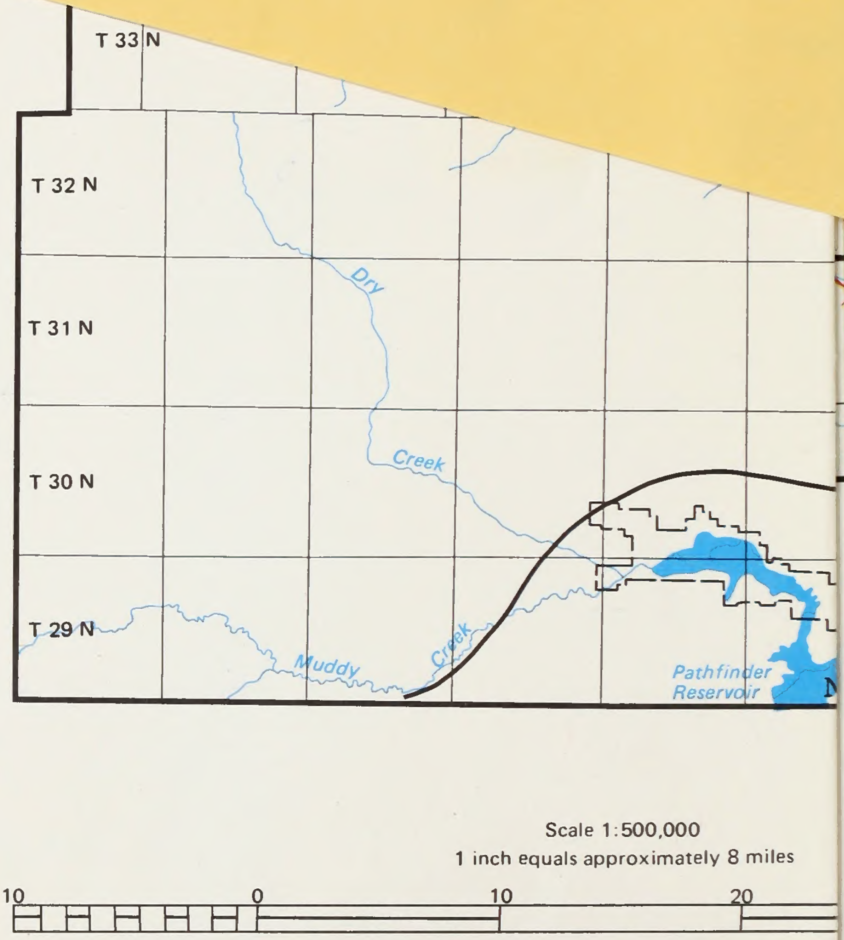
BORROWER'S C

TD 195 .C58 P682 1981b

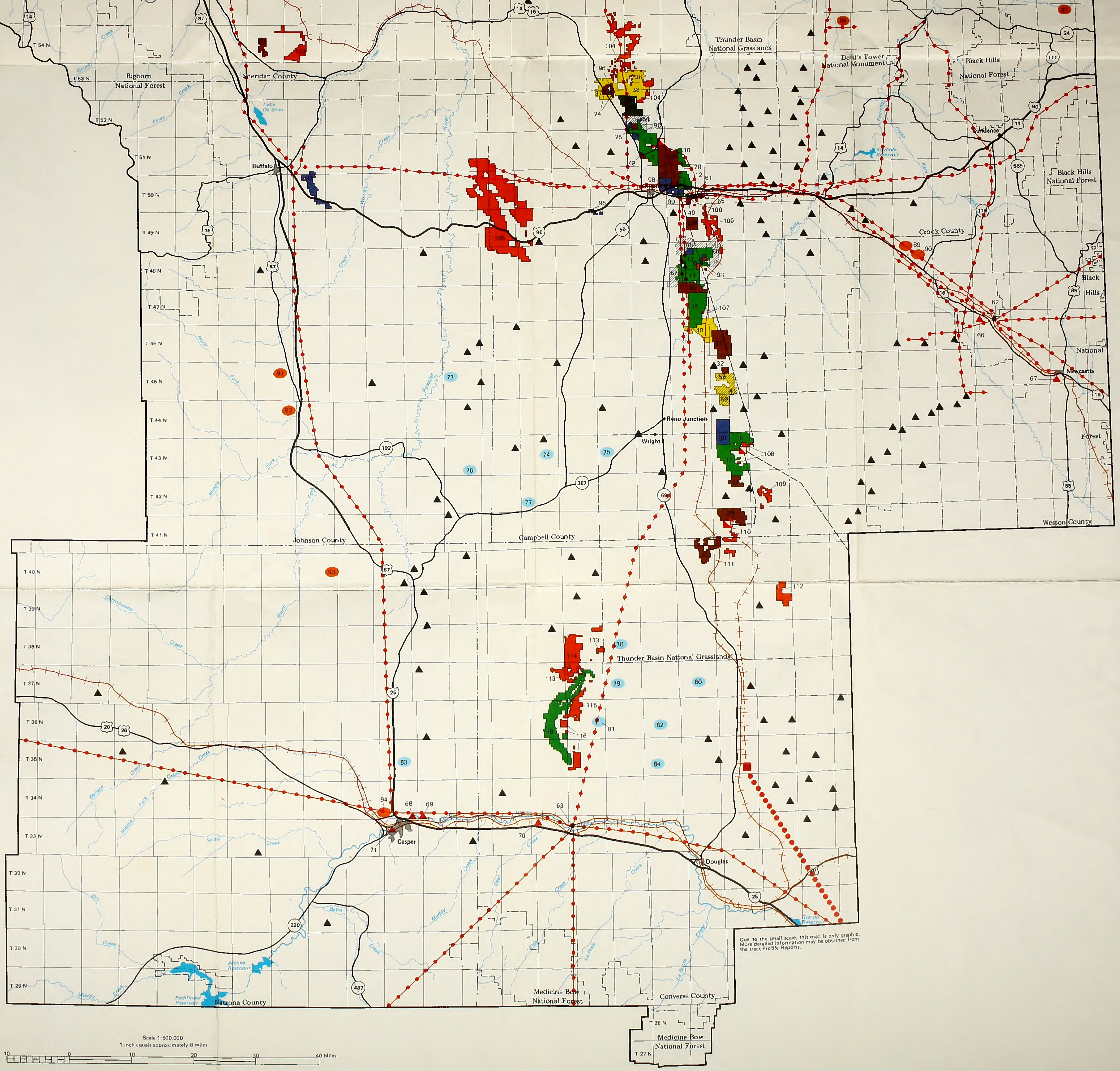
Powder River regional c
environmental impact

DATE LOANED	BORROWER

USDI — BLM


T 33 N
T 32 N
T 31 N
T 30 N
T 29 N
Dry
Creek
Muddy
Creek
Pathfinder Reservoir
Scale 1:500,000
1 inch equals approximately 8 miles
10
0
10
20

N
Miles City
Hysham
Forsyth
Yellowstone River
Billings
Hardin
Treasure County
Custer County
Lame Deer
Colstrip
Ashland
Broadus
Birney
Northern Cheyenne Indian Reservation
Yellowstone County
Yellowtail Reservoir
Crow Indian Reservation
Big Horn County
Rosebud County
Custer National Forest
Powder River County
Ft. MacKenzie Military Reservation
Sheridan
Sheridan County
Bighorn National Forest
Lake De Smet
Thunder Basin National Grasslands
Devil's Tower National Monument
Black Hills National Forest
Sundance
Tongue River
Powder River
Bighorn River
Rosebud Creek
Hanging Woman Creek
T 12 N
T 11 N
T 10 N
T 9 N
T 8 N
T 7 N
T 6 N
T 5 N
T 4 N
T 3 N
T 2 N
T 1 N
T 1 S
T 2 S
T 3 S
T 4 S
T 5 S
T 6 S
T 7 S
T 8 S
T 9 S
T 58 N
T 57 N
T 56 N
T 55 N
T 54 N
T 53 N
T 52 N
R 23 E
R 24 E
R 25 E
R 26 E
R 27 E
R 28 E
R 29 E
R 30 E
R 31 E
R 32 E
R 33 E
R 34 E
R 35 E
R 36 E
R 37 E
R 38 E
R 39 E
R 40 E
R 41 E
R 42 E
R 43 E
R 44 E
R 45 E
R 46 E
R 47 E
R 48 E
R 49 E
R 50 E
R 51 E
R 52 E
R 53 E
R 54 E
R 91 W
R 90 W
R 89 W
R 88 W
R 86 W
R 85 W
R 83 W
R 82 W
R 81 W
R 80 W
R 79 W
R 78 W
R 77 W
R 76 W
R 75 W
R 74 W
R 73 W
R 72 W
R 71 W
R 70 W
R 69 W
R 68 W
R 67 W
R 66 W
R 65 W
R 64 W
R 63 W
R 62 W
R 61 W
12
22
94
312
10
47
39
87
212
90
314
59
14
16
14A
331
338
335
112
24
111
60
64
101
19
50
51
52
53
3
20
21
22
47
102
104
96
24
25
36
38



Due to the small scale, this map is only graphic. More detailed information may be obtained from the tract Profile Reports.

Scale 1:500,000
1 inch equals approximately 8 miles
10 0 10 20 30 40 Miles

🟩 **Producing Mine**
1 Colstrip
2 Big Sky
3 Absaloka
4 Coal Creek
5 Spring Creek
6 Decker East & West
7 Big Horn
8 North Rawhide
9 Eagle Butte
10 Fort Union
11 Clovis Point
12 Wyodak
13 Caballo
14 Belle Ayr
15 Cordero
16 Jacobs Ranch
17 Black Thunder
18 Dave Johnston

🟫 **Nonproducing Mine**
19 Montco-Nance
20 CX Ranch
21 Ash Creek
22 Black Mountain
23 Dutchman
24 Wildcat Creek
25 Buckskin
26 Dry Fork
27 South Rawhide
28 East Gillette
29 Peabody
30 Rojo Caballos
31 Coal Creek
32 Wymo Fuels
33 North Rochelle
34 Rochelle
35 Antelope

🟨 **Delineated Coal Tracts**
36 Rock Pile
37 Wildcat
38 Calf Creek
39 Hay Creek
40 Mt. Logan
41 Two Top

🟥 **Selected Coal Tracts (Maintenance)**
42 Colstrip D
43 Colstrip A & B
44 Colstrip C
45 Spring Creek
46 North Decker
47 West Decker
48 Little Rawhide Creek
49 Fortin Draw

▨ **Selected Coal Tracts (Competitive)**
50 Ashland(Coalwood)
a. Coal Creek
b. Cook Mtn.
51 Ashland(Decker-Birney)
52 Northwest Otter Creek
53 Southwest Otter Creek
54 Spring Draw
55 Rocky Butte
56 Timber Creek
57 Duck Nest Creek
58 Kintz Creek
59 Keeline

● **Existing Power Plant**
60 Colstrip 1
Colstrip 2
61 Neil Simpson
Wyodak
62 Osage
63 Dave Johnston

○ **Proposed Power Plant**
64 Colstrip 3
Colstrip 4
65 Wyodak 2

▲ **Refinery**
66 Osage
67 Wyoming
68 Texaco
69 Little America
70 Glenrock
71 Amoco

🟥 **Proposed Gasification Plant**
72 WyCoalGas

🔵 **Uranuim Mine and Mill Area**
73 Irigaray In Situ
74 Greasewood Creek Mine
North Butte Mine & Mill
PINTEC & Thunderbird Joint In Situ
75 Reno Road In Situ
76 Charlie Ore Body Mine & Mill
77 Moore Ranch Mine
Sand Rock Mill
78 Bear Creek Mine & Mill
79 Open Pit & Sectin 34 Mines
80 Teton Exploration In Situ
81 Bill Smith Mine
SPRB Mill
82 Highland Mine & Mill
83 Nine Mile Lake In Situ
84 Morton Ranch Mine & Mill

🟠 **Bentonite Mine and Mill Area**
85 American Colloid Mine & Mill
86 NL-Industries Mine & Mill
87 International Mineral Co. Mine & Mill
88 Federal Bentonite Corp. Colony Mine & Mill
89 American Colloid Mine
90 Federal Bentonite Division Mine
91 Benton Clay Corp. Mine
92 Kaycee Bentonite Corp. Mine
93 Benton Clay Corp. Mill
94 Kaycee Bentonite Corp. Mill

🟦 **I-90 Exchange**
95 Big Horn
96 Gulf
97 Belco
98 Carter-Exxon
99 Kerr-McGee
100 Wyodak

⬛ **I-90 Exchange and Delineated Coal Tracts**

🟩 **Noncompetitive Leases**
101 Peabody Coal Company
102 Consol

🟥 **Preference Right Lease Applications**
103 Ulm Project
104 Wildcat Creek Area
105 Thunderbird Project
Thunderbird II
106 South Gillette
107 Belle Fourche
108 East Black Thunder
109 Rochelle Area
110 North Antelope
111 South Antelope
112 Dull Center
113 Sand Draw
114 Stevens North
115 Stevens South
116 South Powder River

▲ Oil & Gas Field Area

◪ Proposed Coal Slurry Preparation Plant

—●—●—●— Existing Transmission Line

-●- -●- -●- Proposed Transmission Line

—+—+—+— Existing Railroad

+ + + Proposed Railroad

● ● ● ● ● Proposed WyCoalGas Pipeline

— — — — Proposed ETSI Pipeline

REGIONAL ACTIVITY

Powder River Regional Coal Environmental Impact Statement

☆ GPO 1981-779-526

REGIONAL ACTIVITY

Powder River Regional Coal Environmental Impact Statement

☆ GPO 1981-779-526